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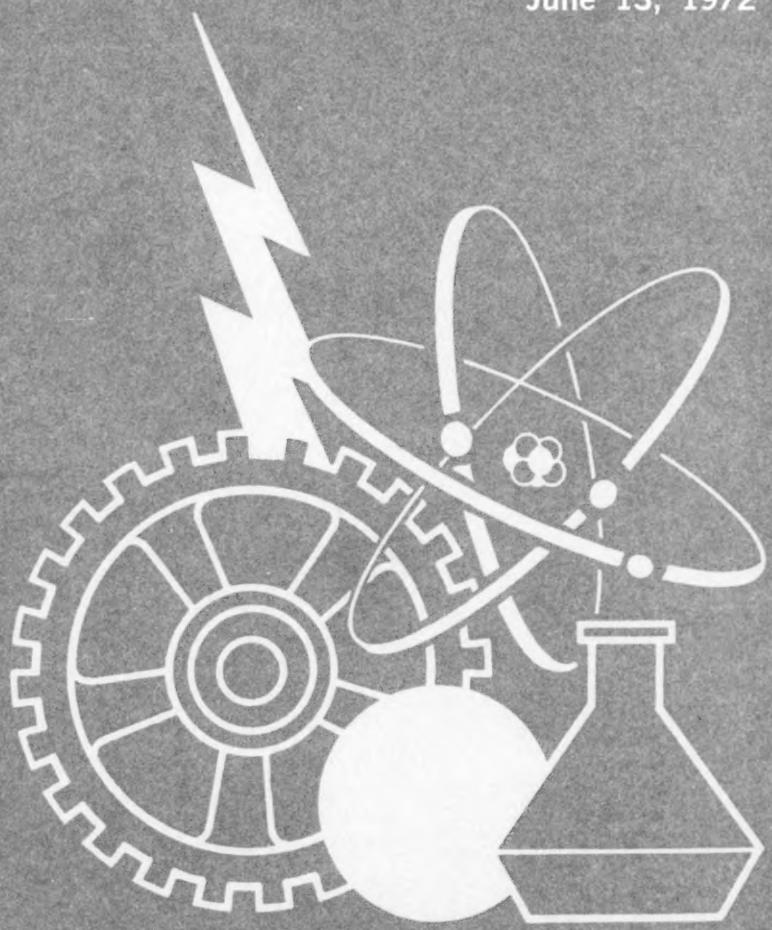
PATENTS

June 13, 1972



U. S. DEPARTMENT OF COMMERCE
Patent Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

June 13, 1972 Volume 899 Number 2

CONTENTS

	Page
Issue of June 13, 1972	407
Patent and Trademark Notices	
United States Adopted Names	408
Legal Journals—Proposed Placing of Announcements	408
U.S. District Court—Civil Action No. 791—72	408
Title 37—Appeal to U.S. Court of Customs and Patent Appeals	409
Patent Suits	409
Patent Notices	
Dedications	411
Disclaimers	411
Certificates of Correction for the Week of June 13, 1972	412
Condition of Patent Applications	413
Reissue Patents Granted	414
Plant Patents Granted	416
Patents Granted	
General and Mechanical	417
Chemical	644
Electrical	734
Design Patents Granted	801
Index of Patentees	PI 1
Indices of Reissues, Plants, and Designs	PI 50
Classification of	
Patents (Including Reissues)	PI 53
Designs and Plants	PI 56
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 57
Designs and Plants	PI 59

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PATENT OFFICE NOTICES

United States Adopted Names

List No. 31

November 1, 1971 to February 29, 1972

The following nonproprietary names for the drugs described have been adopted by the USAN Council (the nomenclature committee sponsored by the American Medical Association, the American Pharmaceutical Association and the United States Pharmacopeial Convention) in cooperation with the interested manufacturers. The designation "United States Adopted Names" (USAN) has been coined to distiguish these formally adopted nonproprietary names from other nonproprietary names. Adoption of such names does not imply endorsement of the products involved by the A.M.A. Council on Drugs, the United States Pharmacopeia or the National Formulary.

Any comments or suggestions should be addressed to Doctor Joseph B. Jerome, Secretary, United States Adopted Names Council, American Medical Association, 535 N. Dearborn St., Chicago, Ill. 60610.

amicloral: veterinary feed additive
amoxicillin: antibiotic
butamirate citrate: antitussive.
capobenic acid: anti-arrhythmic
carbidopa: decarboxylation inhibitor
cephazolin: antibiotic
clindamycin phosphate: antibacterial; antiparasitic
dacarbazine: antineoplastic
dimethicone 350: soft tissue augmentation
econazole: antifungal
floxacillin: antibiotic
homosalate: sunscreen
lenperone: tranquilizer
methynodiol diacetate: oral progestin
nandrolone cyclotate: anabolic
pentapiperium methylsulfate: anticholinergic; antisecretory
polyglactin: absorbable suture
seclazone: anti-inflammatory; uricosuric
sudoxicam: anti-inflammatory
taclamine: CNS agent
tolindate: antifungal
tralonide: topical steroid

Legal Journals

[37 CFR Parts 1, 2]

Proposed Placing of Announcements

Notice is hereby given that pursuant to the authority contained in section 31 of the Act of July 19, 1952 (66 Stat. 795; 35 U.S.C. section 31), the Patent Office proposes to amend Title 37 of the Code of Federal Regulations by revising §§ 1.345(b) and 2.14(b).

All persons are invited to present their written views, objections, recommendations, or suggestions in connection with the proposed changes on or before July 18, 1972. Such views, objections, recommendations, and suggestions should be addressed to the Commissioner of Patents, Washington, D.C. 20232. No oral hearing will be held.

The proposed changes, if adopted, will permit agents and attorneys who practice before the Patent Office in patent or trademark matters to place dignified announcements in legal journals, intended essentially for lawyers only, to the effect that they are available to act as consultants to or as associates of other lawyers in the practice of patent or trademark law before the Patent Office.

These changes would bring Patent Office regulations into conformance with that portion of disciplinary rule, DR 2–105(A)(3) of the Code of Professional Responsibility of the American Bar Association, which provides that "(a) lawyer shall not hold himself out publicly as a specialist or as limiting his practice except (that) * * * (a) lawyer available to act as a consultant to or as an associate of other lawyers in a particular branch of law or legal service may * * * publish in legal journals a dignified announcement of such announcement, but the announcement shall not contain a representation of special competence or experience."

The proposed changes, however, would not be construed to permit a registered attorney or agent to "distribute (such announcements) to other lawyers," as now permitted by DR 2–105.

The sections, if amended as proposed, would read as follows:

§ 1.345 *Advertising.*

* * * * *

(b) The use of simple professional letterheads, calling cards, or office signs, simple announcements necessitated by opening an office, change of association, or change of address, distributed to clients and friends, and insertion of listings in common form (not display) in a classified telephone or city directory, dignified announcements addressed to lawyers, in legal journals intended essentially for lawyers only, of availability to act as a consultant to or as an associate of other lawyers in the practice of patent law before the Patent Office where such announcements are permitted by local custom, and listings and professional cards with biographical data in standard professional directories shall not be considered a violation of the rule.

* * * * *

§ 2.14 *Advertising.*

* * * * *

(b) The use of simple professional letterheads, calling cards, or office signs; simple announcements necessitated by opening an office, change of association, or change of address, distributed to clients and friends; listings in common form (not display) in a classified telephone or city directory; dignified announcements addressed to lawyers, in legal journals intended essentially for lawyers only, of availability to act as a consultant to or as an associate of other lawyers in the practice of trademark law before the Patent Office where such announcements are permitted by local custom; and listings and professional cards with biographical data in standard professional directories are not prohibited.

* * * * *

Dated: May 2, 1972.

RICHARD A. WAHL,
Acting Commissioner of Patents.

Approved: May 3, 1972.

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 72-7160; Filed 5-10-72; 8:49 am]

Published in 37 FR 9488; May 11, 1972

United States District Court for the District of Columbia

RIPPLE TWIST MILLS, INC., Plaintiff
v.
INDUSTRIAL KNITTING CORPORATION, Defendant

Civil Action No. 791—72

ORDER OF PUBLICATION ON ABSENT DEFENDANT IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLUMBIA

The object of this suit under the Patent Laws of The United States is to secure (1) an adjudication of invalidity of United States Letters Patent 3,513,668 granted May 26, 1970, (2) preliminary and permanent injunction against Defendant, its agents, servants, employees and attorneys enjoining them and each of them from asserting or threatening to assert the aforesaid Letters Patent against customers or potential customers of Plaintiff and restraining them and each of them from filing or prosecuting any civil action or action against Plaintiff and/or its customers for infringement of said Letters Patent, (3) costs and attorneys fees, and (4)

such other and further relief as may to this Court appear to be just and equitable.

On motion of the Plaintiff, it is this 27th day of April 1972, ordered that the Defendant, INDUSTRIAL KNITTING CORPORATION, a Canadian corporation having a principal place of business at 500 Sauve Street W, Montreal, Quebec, Canada, cause its appearance to be entered herein on or before the fortieth day exclusive of Sundays and legal holidays, occurring after the day of the first publication of this order; otherwise the cause will be proceeded with as in case of default.

WILLIAM B. BRYANT,
Judge.

TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

Chapter I—Patent Office, Department of Commerce

PART 1—RULES OF PRACTICE IN PATENT CASES

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Appeal to U.S. Court of Customs and Patent Appeals

The Commissioner of Patents is amending §§ 1.301 and 2.145 of the rules of practice to set forth the time in which an order for transmitting a transcript to the Court of Customs and Patent Appeals should be filed in the Patent Office. Additionally, for the purpose of clarification, all references to "subsection" in § 2.145 have been amended to read "paragraph." These amendments do not effect any change in practice, but merely notify parties filing appeals of the time necessary for the Patent Office to copy and certify a transcript. Since these changes impose no burden on any person, notice and public procedure thereon are deemed unnecessary.

Therefore, pursuant to the authority contained in section 41 of the Act of July 5, 1946 (60 Stat. 440; 15 U.S.C. 1123), and section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), Parts 1 and 2 of Chapter I of Title 37 of the Code of Federal Regulations are hereby amended as follows:

1. Section 1.301 is amended by adding a new sentence at the end. As amended, § 1.301 reads as follows:

§ 1.301 *Appeal to U.S. Court of Customs and Patent Appeals.*

Any applicant dissatisfied with the decision of the Board of Appeals, and any party to an interference dissatisfied with the decision of the Board of Patent Interferences, may appeal to the U.S. Court of Customs and Patent Appeals. The appellant must take the following steps in such an appeal: (a) In the Patent Office give notice to the Commissioner and file the reasons of appeal (see §§ 1.302 and 1.304); (b) in the court, file a petition of appeal and a certified transcript of the record within a specified time after filing the reasons of appeal, and pay the fee for appeal, as provided by the rules of the court. The transcript will be transmitted to the Court by the Patent Office on order of and at the expense of the appellant. Such order should be filed with the notice of appeal, but in no case should it be filed later than 15 days thereafter.

2. In § 2.145, paragraph (a) is amended by adding a sentence at the end; paragraphs (b), (c), and (d) are amended by substituting "paragraph" for "subsection." As amended, § 2.145 reads as follows:

§ 2.145 *Appeal to court and civil action.*

(a) *Appeal to U.S. Court of Customs and Patent Appeals.* An applicant for registration, or any party to an interference, opposition, or cancellation proceeding or any party to an application to register as a concurrent user, hereinafter referred to as inter partes proceedings, who is dissatisfied with the decision of the Trademark Trial and Appeal Board and any registrant who has filed an affidavit or declaration under section 8 of the act or who has filed an application for renewal and is dissatisfied with the decision of the Commissioner (§§ 2.165, 2.184), may appeal to the U.S. Court of Customs and Patent Appeals. The appellant must take the following steps in such an appeal: (1) In the Patent Office give notice to the Commissioner and file the reasons of appeal (see paragraphs (b) and (d) of this section); (2) in the court, file a petition of appeal and a certified transcript of the record within a specified time after filing the reasons of appeal, and pay the fee for appeal, as provided by the rules of the court. The transcript will be transmitted to the Court by the Patent Office on order of and at the expense of the appellant. Such order should be filed with the notice of appeal, but in no case should it be filed later than 15 days thereafter.

(b) *Notice and reasons of appeal.* (1) when an appeal is taken to the U.S. Court of Customs and Patent Appeals, the appellant shall give notice thereof to the Commissioner, and file in the Patent Office, within the time specified in paragraph (d) of this section, his reasons of appeal specifically set forth in writing.

(2) In inter partes proceedings, the notice and reasons must be served as provided in § 2.119.

(c) *Civil action.* (1) Any person who may appeal to the U.S. Court of Customs and Patent Appeals (paragraph (a) of this section), may have remedy by civil action under section 21(b) of the act. Such civilization must be commenced within the time specified in paragraph (d) of this section.

(2) If an applicant or registrant in an ex parte case has taken an appeal to the U.S. Court of Customs and Patent Appeals, he thereby waives his right to proceed under section 21(b) of the act.

(3) If a party to an inter partes proceeding has taken an appeal to the U.S. Court of Customs and Patent Appeals, and any adverse party to the case shall, within 20 days after the appellant shall have filed notice of the appeal to the court (paragraph (b) of this section), file notice with the Commissioner that he elects to have all further proceedings conducted as provided in section 21(b) of the act, certified copies of such notices will be transmitted to the U.S. Court of Customs and Patent Appeals for such action as may be necessary. The notice of election must be served as provided in § 2.119.

(d) *Time for appeal or civil action.* The time for filing the notice and reasons of appeal to the U.S. Court of Customs and Patent Appeals (paragraph (b) of this section), or for commencing a civil action (paragraph (c) of this section), is 60 days from the date of the decision of the Trademark Trial and Appeal Board or the Commissioner, as the case may be. If a petition for rehearing or reconsideration is filed within 30 days after the date of the decision, the time is extended to 30 days after action on the petition. No petition for rehearing or reconsideration filed outside the time specified herein after such decision, nor any proceedings on such petition shall operate to extend the period of 60 days hereinabove provided. The times specified herein are calendar days. If the last day of time specified for appeal, or commencing a civil action falls on a Saturday, Sunday, or legal holiday, the time is extended to the next day which is neither a saturday, Sunday, nor a holiday. If a party to an inter partes proceeding has taken an appeal to the U.S. Court of Customs and Patent Appeals and an adverse party has filed notice under section 21(a)(1) of the act that he elects to have all further proceedings conducted under section 21(b) of the act, the time for filing a civil action thereafter is specified in section 21(a)(1) of the act.

Effective date. This amendment will become effective upon its publication in the Federal Register (5-11-72).

Dated: May 1, 1972.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Approved: April 28, 1972.

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 72-7159; Filed 5-10-72; 8:49 am]

Published in 37 F.R. 9175; May 11, 1972

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,509,833, T. Miller, MAGNIFYING AND LIGHT CONCENTRATING DEVICE FOR TELEPHONE DIALS, filed Nov. 16, 1971, D.C., N.D. Ohio (Cleveland), Doc. C71-349, *Tobias Miller v. General Telephone Company.*

2,730,269, Earle and Covington, FLUID APPARATUS, filed Aug. 28, 1969, D.C., N.D. Ga. (Atlanta), Doc. 13052, *Carl A. Covington, Dorothy B. Marsh and G. W. Murphy Industries, Inc. v. D-K Pneumatics, Inc.* Dismissed by consent of both parties under Rule 41(a), Oct. 26, 1971.

2,734,226, W. H. Willert, INJECTION MOLDING APPARATUS, **filed** Dec. 10, 1971, D.C. Conn. (Bridgeport), Doc. B–424, *Egan Machinery Company and William H. Willert* v. *Bipel International, Inc.*

2,761,015, J. D. Banning, PUSH BUTTON TELEPHONE NUMBER SELECTOR, **filed** Nov. 4, 1971, D.C., S.D. Tex. (Houston), Doc. CA 71–H–1234, *Joe Doyle Banning* v. *Southwestern Bell Telephone.*

2,784,955, C. E. Compton, ROTARY MINING MACHINE CUTTER HEAD WITH REAR HELICALLY EXTENDING TRANSVERSE OPENING, **filed** Apr. 9, 1969, D.C., N.D. Va. (Elkins), Doc. 69–3–C, *Charles E. Compton, Joy Manufacturing Company and Polan Industries* v. *Rish Equipment Company.*

2,804,401, B. A. Cousino, MAGNETIC SOUND TAPE, **filed** Nov. 8, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c2679, *Faraday, Inc.* v. *RCA Corporation.* Case Dismissed, Nov. 11, 1971.

2,827,665, Rogers, Bender and Ten Broeck, MANUFACTURE OF FLEXIBLE CELLULAR MATERIAL, **filed** Nov. 14, 1969, D.C.N.J. (Newark), Doc. C–1365–69, *Diamond Shamrock Corporation* v. *The Goodyear Tire & Rubber Company.* Stipulation and order of dismissal of action, Jan. 6, 1972.

2,945,582, Abraham and Metzger, BOWLING BALL CARRYING CASE, **filed** Nov. 20, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c2923, *Triangle Leather Goods Company* v. *Paul Abraham and Romain Metzger.* On stipulation, ordered first amended complaint be dismissed with prejudice, Aug. 5, 1971.

3,088,948, Little and Poonj, PRODUCTION OF TRIS-2-HYDROXYALKYL ISOCYANURATES, **filed** Aug. 26, 1970, D.C., N.D.N.Y. (Utica), Doc. 70–CV–300, *Allied Chemical Corporation* v. *Schenectady Chemicals, Inc.* Stipulation of dismissal without prejudice, Jan. 14, 1972.

3,093,177, J. P. Villo, THREAD LOCK AND METHOD OF MAKING THE SAME, **filed** Dec. 8, 1969, D.C., N.D. Ill. (Chicago), Doc. 69c2538, *Standard Pressed Steel Company* v. *Coral Corporation and USM Corporation.* Consent judgment; plaintiff owner of patent and said patent is valid, defendants have infringed, May 3, 1971.

3,450,212, A. G. Sylvester, MULTIPLE TOOTH SUBSOIL PLOW, **filed** Jan. 17, 1972, D.C., W.D. Okla (Oklahoma City), Doc. 72–39–C, *Cline Industries, Inc.* v. *James Harrison, doing business as Harrison Manufacturing Co.*

3,474,553, G. E. Moore, FABRIC SPREADING AND FEEDING MACHINE, **filed** Nov. 17, 1969, D.C. Conn (New Haven), Doc. 13537, *R. L. Sjostrom Company (Formerly Sheetmaster Corporation)* v. *Julius Kupferschmid.* Stipulation and order dismissing action, Oct. 8, 1971.

3,477,406, M. Fujinaga, METHOD OF CULTIVATION OF PENAEID SHRIMP, **filed** Jan. 5, 1972, D.C. Del. (Wilmington), Doc. 4306, *United States of America* v. *Marifarms, Inc. and Motosaku Fujinaga also known as Gensaku Hudinaga.*

3,478,159, P. D. Olson, COLLAPSIBLE KEYBOARD TEACHING AID EMPLOYING EARPHONE SETS AND PLURAL KEYBOARDS, **filed** Jan. 14, 1971, D.C., N.D. Ill. (Chicago), Doc. 72c118, *Musitronic, Inc.* v. *The Wurlitzer Company.*

3,560,600, V. L. Gliniecki, SURFACE TREATMENT OF EXTRUDED PLASTIC FOAM, **filed** Dec. 10, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–2918–EC, *Huntsman Container Corp.* v. *Dow Chemical Co. et al.*

3,599,933, E. L. Smith, METHOD AND APPARATUS FOR PLUGGING FURNACE TAPS, **filed** Oct. 27, 1971, D.C. Idaho (Boise), Doc. C–4–71–29, *Elvin L. Smith* v. *Roy E. Thorn.*

3,610,815, Gould, Lieberman and Sarabia, MOTION PICTURE FILM COLOR CORRECTION SYSTEM AND METHOD, **filed** Oct. 27, 1971, D.C., S.D.N.Y., Doc. 71–C–4681, *Teletronics International, Inc.* v. *Reeves Telecom Corp.*

Dedications

2,772,909.—*Sigurd M. Moberg,* Pompton Plains, N.J. BAG SEAL. Patent dated Dec. 4, 1956. Dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company.*

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

2,796,277.—*Winfred M. Brooks,* West Orange, and *Sigurd M. Moberg,* Pompton Plains, N.J. SHACKLE SEAL. Patent dated June 18, 1957. Dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company.*

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

2,890,552.—*William Ernest Henderson,* Lockport, Ill. METHOD OF PACKAGING. Patent dated June 16, 1959. Dedication filed May 24, 1971, by the assignee, *Union Carbide Corporation.*

Hereby dedicates to the People of the U.S. the remaining term of said patent.

2,899,230.—*Sigurd M. Moberg,* Pompton Plains, N.J. CORD SEAL AND METHOD OF MAKING THE SAME. Patent dated Aug. 11, 1959. Dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company.*

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

3,170,830.—*Sigurd M. Moberg,* Pompton Plains, N.J. APPARATUS FOR APPLYING POULTRY TAGS. Patent dated Feb. 23, 1965. Dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company.*

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

3,175,938.—*Sigurd M. Moberg,* East Orange, N.J. POULTRY TAGGING DEVICE. Patent dated Mar. 30, 1965. Dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company.*

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

3,241,844.—*James P. Morley,* Morton Grove, Ill. END FACE SEAL ASSEMBLY WITH INSTALLATION RETENTION MEANS. Patent dated Mar. 22, 1966. Dedication filed Mar. 16, 1972, by the assignee, *Chicago Rawhide Mfg. Company.*

Hereby dedicates to the Public the remaining term of said patent.

3,265,426.—*Winfred M. Brooks,* West Orange, and *Sigurd M. Moberg,* East Orange, N.J. SHACKLE SEAL. Patent dated Aug. 9, 1966. Dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company.*

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

3,278,214.—*Sigurd M. Moberg,* East Orange, N.J. SELF-LOCKING SHACKLE SEAL. Patent dated Oct. 11, 1966. Dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company.*

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

3,301,961.—*Martin A. Odom,* Oakland, Calif. AUTOMATIC TELEPHONE CALL TRANSLATING AND FORWARDING APPARATUS. Patent dated Jan. 31, 1967. Dedication filed Jan. 3, 1972, by the assignee, *Ford Industries, Inc.*

Hereby dedicates to the Public the remaining term of said patent.

3,649,722.—*Denzel Allan Nicholson,* Springfield Township, Hamilton County, Ohio. HALOGENATED PHOSPHONOACETATE ESTERS. Patent dated Mar. 14, 1972. Dedication filed Mar. 8, 1972, by the assignee, *The Procter & Gamble Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

Disclaimers

3,083,595.—*Gerard A. Frank,* Allentown, and *Karl A. Schmuldt,* Emmaus, Pa. THERMO-COMPRESSION BONDING APPARATUS. Patent dated Apr. 2, 1963. Disclaimer filed Mar. 29, 1972, by the assignee, *Western Electric Company, Inc.*

Hereby enters this disclaimer to claim 1 of said patent.

3,197,920.—*Ralph W. Moore,* Hagerstown, Md., and *Joseph E. Bowling, Jr.,* Waynesboro, Pa. THROWING WHEEL AND PARTS THEREFOR. Patent dated Aug. 3, 1965. Disclaimer filed Mar. 17, 1972, by the assignee, *The Carborundum Company.*

Hereby enters this disclaimer to claims 11, 12 and 14 of said patent.

3,376,272.—*John E. Masters* and *Darrell D. Hicks,* Louisville, Ky. POLYESTER RESINS. Patent dated Apr. 2, 1968. Disclaimer filed Mar. 16, 1972, by the assignee, *Celanese Coatings Company.*

Hereby enters this disclaimer to claims 2, 3, 5 and 6 of said patent.

3,404,357.—*Wolfgang Krank, Gerhard Schickle* and *Erich Schuttloffel,* Backnang, Germany. WAVEGUIDE. Patent dated Oct. 1, 1968. Disclaimer filed Jan. 14, 1972, by the assignee, *Telefunken Patentverwertungs G.m.b.H.*

Hereby enters this disclaimer to claims, 5, 6, 7 and 8 of said patent.

3,540,886.—*Robert E. Ansel* and *Charles M. Taubman,* Cook County, Ill. ACIDIC PHOTOCONDUCTIVE RESIN BINDERS. Patent dated Nov. 17, 1970. Disclaimer filed Dec. 17, 1971, by the assignee, *DeSoto, Inc.*

Hereby enters this disclaimer to all the claims of said patent.

3,573,042.—*Terry W. Milligan, Belmont,* and *Richard W. Young,* Wellesley Hills, Mass. PHOTOGRAPHIC COLOR DIFFUSION TRANSFER PROCESSES AND FILM UNIT FOR USE THEREIN. Patent dated Mar. 30, 1971. Disclaimer filed Mar. 29, 1972, by the assignee, *Polaroid Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to Oct. 21, 1986.

3,575,085.—*William E. McAdam, Jr.,* Thousand Oaks, Calif. ADVANCED FIRE CONTROL SYSTEM. Patent dated Apr. 13, 1971. Disclaimer filed Feb. 10, 1972, by the assignee, *Hughes Aircraft Company.*

Hereby enters this disclaimer to claims 3, 4, 5, 8, 10, 11, 12, 13, 14, 15, 16, 22, 23, 24, 25 and 33 of said patent.

3,606,566.—*Dale L. Bethke,* West Covina, Calif. BUSHING FOR DRILL JIGS AND THE LIKE. Patent dated Sept. 20, 1971. Disclaimer filed Mar. 8, 1972, by the inventor.

Hereby enters this disclaimer to claim 1 of said patent.

3,608,809.—*Robert Holbrook Cushman,* Princeton, N.J. APPARATUS FOR UNIFORM MULTIPLE-LEAD BONDING. Patent dated Sept. 28, 1971. Disclaimer filed Jan. 24, 1972, by the assignee, *Western Electric Company, Incorporated.*

Hereby enters this disclaimer to claims 11, 12, 13 and 15 of said patent.

Certificates of Correction for the Week of June 13, 1972

Re. 27,075	3,591,204	3,615,955	3,622,345	3,625,348	3,629,421	3,633,945	3,640,604
Re. 27,132	3,591,784	3,616,253	3,622,460	3,625,369	3,629,423	3,634,041	3,640,611
Re. 27,163	3,591,911	3,616,344	3,622,468	3,625,408	3,629,585	3,634,583	3,640,640
Re. 27,173	3,593,027	3,616,447	3,622,514	3,625,479	3,629,682	3,634,644	3,640,654
3,453,263	3,593,034	3,616,460	3,622,562	3,625,509	3,629,731	3,634,738	3,640,906
3,475,386	3,594,277	3,616,462	3,622,563	3,625,858	3,629,786	3,634,819	3,641,029
3,489,425	3,595,725	3,616,573	3,622,579	3,625,812	3,629,788	3,634,821	3,641,120
3,490,984	3,596,145	3,616,602	3,622,618	3,625,827	3,629,845	3,634,993	3,641,140
3,494,936	3,596,682	3,616,693	3,622,627	3,625,857	3,630,082	3,635,132	3,641,178
3,498,786	3,596,712	3,617,335	3,622,654	3,626,024	3,630,351	3,635,158	3,641,383
3,509,194	3,597,062	3,617,349	3,622,821	3,626,327	3,630,379	3,635,241	3,641,487
3,509,195	3,597,647	3,617,363	3,622,826	3,626,438	3,630,390	3,635,410	3,641,706
3,535,291	3,598,252	3,618,032	3,622,974	3,626,805	3,630,437	3,635,679	3,642,037
3,537,373	3,598,455	3,618,069	3,622,982	3,626,829	3,630,465	3,635,686	3,642,102
3,551,365	3,598,778	3,618,102	3,622,984	3,626,905	3,630,561	3,635,785	3,642,168
3,558,621	3,599,009	3,618,116	3,623,044	3,627,499	3,630,672	3,635,844	3,642,258
3,561,003	3,601,913	3,618,371	3,623,217	3,627,578	3,630,677	3,635,845	3,642,495
3,563,122	3,602,043	3,618,522	3,623,323	3,627,603	3,630,679	3,635,861	3,642,627
3,567,683	3,603,572	3,618,730	3,623,467	3,627,648	3,630,840	3,635,863	3,642,740
3,567,895	3,604,643	3,618,792	3,623,579	3,627,702	3,631,024	3,636,074	3,642,799
3,568,783	3,604,698	3,619,136	3,623,623	3,627,726	3,631,094	3,636,164	3,642,914
3,569,660	3,604,790	3,619,434	3,623,656	3,627,745	3,631,105	3,636,167	3,643,299
3,569,682	3,606,743	3,619,483	3,623,677	3,627,755	3,631,134	3,636,300	3,643,397
3,575,920	3,607,000	3,619,524	3,623,684	3,627,786	3,631,368	3,636,308	3,643,637
3,577,156	3,607,010	3,619,652	3,623,937	3,627,789	3,631,385	3,636,495	3,643,670
3,578,574	3,607,817	3,619,762	3,623,990	3,627,870	3,631,510	3,637,559	3,643,698
3,579,493	3,608,030	3,620,340	3,623,994	3,627,920	3,631,597	3,637,586	3,644,015
3,580,800	3,608,173	3,620,372	3,624,000	3,627,930	3,631,726	3,637,880	3,644,182
3,581,228	3,608,508	3,620,433	3,624,026	3,628,237	3,631,911	3,638,435	3,644,199
3,582,003	3,609,112	3,620,630	3,624,124	3,628,266	3,631,950	3,638,453	3,644,206
3,582,734	3,609,160	3,620,685	3,624,145	3,628,285	3,632,070	3,638,496	3,644,562
3,584,048	3,609,746	3,620,705	3,624,200	3,628,296	3,632,211	3,638,535	3,644,630
3,584,312	3,610,465	3,620,712	3,624,202	3,628,371	3,632,294	3,638,649	3,644,947
3,584,718	3,611,312	3,620,788	3,624,224	3,628,379	3,632,335	3,639,078	3,644,953
3,585,305	3,611,395	3,620,899	3,624,246	3,628,502	3,632,411	3,639,197	3,645,121
3,585,374	3,612,176	3,620,924	3,624,335	3,628,559	3,632,445	3,639,377	3,645,730
3,585,518	3,613,072	3,621,055	3,624,430	3,628,692	3,632,473	3,639,479	3,646,048
3,585,977	3,613,782	3,621,222	3,624,522	3,628,712	3,632,662	3,639,502	3,647,132
3,586,306	3,614,582	3,621,308	3,624,643	3,629,091	3,632,684	3,639,651	3,647,143
3,587,618	3,614,978	3,621,328	3,624,772	3,629,172	3,632,714	3,639,696	3,647,560
3,587,716	3,615,426	3,621,392	3,624,868	3,629,199	3,632,804	3,640,081	3,647,805
3,589,253	3,615,499	3,621,478	3,624,937	3,629,223	3,632,878	3,640,222	3,647,920
3,590,708	3,615,512	3,621,617	3,625,040	3,629,287	3,633,335	3,640,288	3,649,390
3,591,026	3,615,560	3,622,013	3,625,194	3,629,351	3,633,339	3,640,420	3,649,655
3,591,153	3,615,751	3,622,341	3,625,224	3,629,367	3,633,436	3,640,570	3,649,998

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MAY 16, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	3-18-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-04-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	3-03-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	3-01-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods: Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-09-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	9-21-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	2-11-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-12-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	4-19-71
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	3-01-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	1-19-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	3-23-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	3-01-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	2-12-71
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	5-21-71
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	3-18-71

Expiration of patents: The patents within the range of numbers indicated below expire during June 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,709,808 to 2,712,130, inclusive
Plant Patents..... Numbers 1,396 to 1,403, inclusive

REISSUES

JUNE 13, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,384
ACYLATED MITOSENES

Masano Matsui and Yasuhiro Yamada, Tokyo, Keizo Uzu, Shizuoka, and Tadashi Hirata and Shigetoshi Wakaki, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

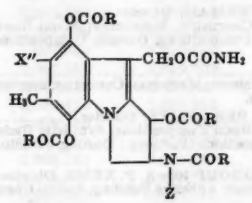
Original No. 3,429,894, dated Feb. 25, 1969, Ser. No. 511,018, Nov. 8, 1965. Application for reissue Dec. 31, 1969, Ser. No. 889,760

Claims priority, application Japan, Nov. 7, 1964, 39/62,806

Int. Cl. C07d *27/80*

U.S. Cl. 260—326.3 **12 Claims**

Acylated mitosenes having the formula



wherein X'' is OCH_3, NHCOR or OCOR, R is H or CH_3 and Z is H or CH_3. These compounds are produced by the reductive acylation of the corresponding mitosene compound. They are useful antibacterial agents.

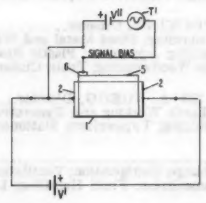
27,385
SCANNED LINE RADIATION SOURCE USING A REVERSE BIASED P-N JUNCTION ADJACENT A GUNN DIODE

Carl Peter Sandbank, Bishop's Stortford, and Michael Brian Neilson Butler, Sawbridgewarth, England, assignors to International Standard Electric Corporation, New York, N.Y.

Original No. 3,447,044, dated May 27, 1969, Ser. No. 643,201, June 2, 1967. Application for reissue Oct. 20, 1969, Ser. No. 871,810

Int. Cl. H01l *15/06*

U.S. Cl. 317—235 R **6 Claims**



A solid state display device employing a light emitting P-N junction adjacent a body of semiconductive material exhibiting moving high field instability effects. As the high field domain travels through said body, electrons from said domain traverse the reverse-biased P-N junction to cause the emission of visible light from the vicinity of said junction. The intensity of the emitted light may be modulated by varying the magnitude of the reverse bias applied to the junction.

27,386
PROCESS FOR AFTERTREATMENT OF COLORED POLYAMIDE FIBERS

Karl Soiron, Riehen, Switzerland, Hans Rafael, Weil am Rhein, Germany, and Walter Stockar, Binningen, Switzerland, assignors to J. R. Geigy A.G., Basel, Switzerland

No Drawing. Original No. 3,490,859, dated Jan. 20, 1970, Ser. No. 665,220, Sept. 5, 1967, which is a continuation of Ser. No. 515,774, Oct. 22, 1965, which in turn is a division of Ser. No. 296,392, July 19, 1963. Application for reissue Sept. 1, 1970, Ser. No. 68,805

Claims priority, application Switzerland, July 31, 1962, 9,156

Int. Cl. D06p *5/02*

U.S. Cl. 8—165 **10 Claims**

An improvement in the dyeing and printing of polyamide fibers, comprising as an after-treatment, the introduction of such fibers which have been freshly dyed or printed with a fiber-reactive dyestuff, prior to the conventional drying, into an aqueous bath which contains a condensation product of dicyanodiamide, urea or an ammonium salt of a mineral acid capable of splitting off ammonia, and formaldehyde; the pH of the bath is adjusted to about 4 to 5.5, and the bath containing the fibers is then heated; also the aforesaid after-treatment baths per se.

27,387
INCREASING THE THERMOSTABILITY OF MICELLAR DISPERSIONS

John A. Davis, Jr., and William J. Kunzman, Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

No Drawing. Original No. 3,493,047, dated Feb. 3, 1970, Ser. No. 746,282, July 22, 1968. Application for reissue Oct. 15, 1970, Ser. No. 81,191

Int. Cl. E21b *43/22, 47/06*

U.S. Cl. 166—252 **16 Claims**

Thermostability of micellar dispersions containing hydrocarbon, aqueous medium, and surfactant can be shifted to higher temperatures by increasing the ratio of surfactant to hydrocarbon within the micellar dispersion. Such dispersions are useful to recover crude oil in a tertiary oil recovery process wherein the temperature of the subterranean formation is as high as 200° F. or more. For example, a subterranean formation at a temperature above about 80° F. can be flooded by designing the surfactant to hydrocarbon ratio within the micellar dispersion to be stable at the temperature of the formation.

27,388
ACCELERATED EPOXY-AMINE RESINOUS COMPOSITIONS CATALYZED WITH —SH YIELDING MATERIAL

Heinz Uelzmann, Cuyahoga Falls, Ohio, assignor to The General Tire & Rubber Company

No Drawing. Original No. 3,554,967, dated Jan. 12, 1971, Ser. No. 792,853, Jan. 21, 1969. Application for reissue Mar. 22, 1971, Ser. No. 127,020

Int. Cl. C08g *30/14*

U.S. Cl. 260—47 EC **6 Claims**

A sulfur compound, which can form a cure-accelerating, SH-containing compound in the presence of an amine curing agent, e.g., ethylene trithiocarbonate, is added to an epoxy resin composition. The resulting composition is stable, but will undergo rapid curing at low temperatures upon the addition of an amine curing agent.

27,389

PIPE JOINT

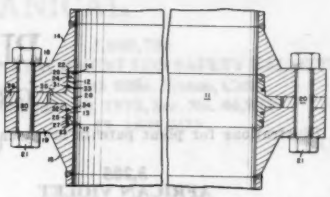
Cassius L. Tillman III, 343 Peters Road, Harvey, La. 70058

Original No. 3,507,506, dated Apr. 21, 1970, Ser. No. 667,260, Sept. 12, 1967, which is a continuation-in-part of Ser. No. 616,714, Feb. 16, 1967. Application for reissue June 5, 1970, Ser. No. 43,988

Int. Cl. F16r *15/00;* F16l *23/00*

U.S. Cl. 277—171 9 Claims

A pipe joint seal for large size pipes (such as 10" diameter or larger) in the form of a tubular member having blunt ends is adapted to be disposed in blunt end recesses of aligned flanged pipes connected together under stressed conditions, such as by studs. Outer annular marginal grooves near the ends of the tubular members are provided to form noses that concentrate distortion under the stressed condition at the ends. A stiffening collar is provided integral with the middle section of the tubular member for disposition between adjacent flanges of the pipes. The collar may extend outwardly beyond the studs that hold the flanges together and are provided with apertures aligned with the studs; or, alternatively, it may not extend as far as the studs, in which case shims or washers are provided about the studs between the flanges to prevent distortion of the flanges.



PLANT PATENTS

GRANTED JUNE 13, 1972

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,205
AFRICAN VIOLET
Hermann Holtkamp, Werther Strasse 5–7, Postfach 19, 4243 Isselburg, Germany
Original application Oct. 7, 1968, Ser. No. 765,700. Divided and this application Oct. 7, 1970, Ser. No. 78,996
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—69 **1 Claim**

A hybrid violet of a descendant of a cross between the *Saintpaulia ionantha* and *Saintpaulia shumensis* species which has permanent new characteristics including strength of stem, fast and vigorous growth, profuse flowering, uniform bouquet, prolonged blooming period, resistance to disease, reliability in initiating new plantlets, retention of flowers past maturity on their respective stems, reliability in new plants retaining characteristics of the parent and pronounced uniformity throughout the life cycle.

3,206
AFRICAN VIOLET
Hermann Holtkamp, Werther Strasse 5–7, Postfach 19, 4243 Isselburg, Germany
Original application Oct. 7, 1968, Ser. No. 765,700. Divided and this application Oct. 7, 1970, Ser. No. 78,997
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—69 **1 Claim**

A hybrid violet of a descendant of a cross between the *Saintpaulia ionantha* and *Saintpaulia shumensis* species which has permanent new characteristics including strength of stem, fast and vigorous growth, profuse flowering, uniform bouquet, prolonged blooming period, resistance of disease, reliability in initiating new plantlets, retention of flowers past maturity on their respective stems, reliability in new plants retaining characteristics of the parent and pronounced uniformity throughout the life cycle.

3,207
AFRICAN VIOLET
Hermann Holtkamp, Werther Strasse 5–7, Postfach 19, 4243 Isselburg, Germany
Original application Oct. 7, 1968, Ser. No. 765,700. Divided and this application Oct. 7, 1970, Ser. No. 78,998
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—69 **1 Claim**

A hybrid violet of a descendant of a cross between the *Saintpaulia ionantha* and *Saintpaulia shumensis* species which has permanent new characteristics including strength of stem, fast and vigorous growth, profuse flowering, uniform bouquet, prolonged blooming period, resistance to disease, reliability in initiating new plantlets, retention of flowers past maturity on their respective stems, reliability in new plants retaining characteristics of the parent and pronounced uniformity throughout the life cycle.

3,208
AFRICAN VIOLET
Hermann Holtkamp, Werther Strasse 5–7, Postfach 19, 4243 Isselburg, Germany
Original application Oct. 7, 1968, Ser. No. 765,700. Divided and this application Oct. 7, 1970, Ser. No. 78,999
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—69 **1 Claim**

A hybrid violet of a descendant of a cross between the *Saintpaulia ionantha* and *Saintpaulia shumensis* species which has permanent new characteristics including strength of stem, fast and vigorous growth, profuse flowering, uniform bouquet, prolonged blooming period, resistance to disease, reliability in initiating new plantlets, retention of flowers past maturity on their respective stems, reliability in new plants retaining characteristics of the parent and pronounced uniformity through the life cycle.

3,209
AFRICAN VIOLET
Hermann Holtkamp, Werther Strasse 5–7, Postfach 19, 4243 Isselburg, Germany
Original application Oct. 7, 1968, Ser. No. 765,700. Divided and this application Oct. 7, 1970, Ser. No. 79,001
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—69 **1 Claim**

A hybrid violet of a descendant of a cross between the *Saintpaulia ionantha* and *Saintpaulia shumensis* species which has permanent new characteristics including strength of stem, fast and vigorous growth, profuse flowering, uniform bouquet, prolonged blooming period, resistance to disease, reliability in initiating new plantlets, retention of flowers past maturity on their respective stems, reliability in new plants retaining characteristics of the parent and pronounced uniformity throughout the life cycle.

3,210
AFRICAN VIOLET
Hermann Holtkamp, Werther Strasse 5–7, Postfach 19, 4243 Isselburg, Germany
Original application Oct. 7, 1968, Ser. No. 765,700. Divided and this application Oct. 7, 1970, Ser. No. 79,002
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—69 **1 Claim**

A hybrid violet of a descendant of a cross between the *Saintpaulia ionantha* and *Saintpaulia shumensis* species which has permanent new characteristics including strength of stem, fast and vigorous growth, profuse flowering, uniform bouquet, prolonged blooming period, resistance to disease, reliability in initiating new plantlets, retention of flowers past maturity on their respective stems, reliability in new plants retaining characteristics of the parent and pronounced uniformity throughout the life cycle.

PATENTS

GRANTED JUNE 13, 1972

GENERAL AND MECHANICAL

3,668,704

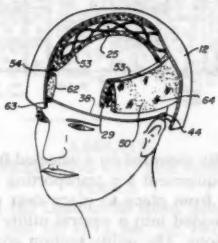
PROTECTIVE HEADGEAR

Robert E. Conroy, 305 South Clifton, Park Ridge, Ill., and John H. Hauger, 739 Lee Boulevard, Hillside, Ill.

Continuation-in-part of application Ser. No. 12,805, Feb. 19, 1970, now abandoned. This application July 13, 1970, Ser. No. 54,513

Int. Cl. A42b *3/00*

U.S. Cl. 2—3 R **16 Claims**



An inflatable member dimensioned to be mounted to the inside curvature of a rigid shell, and to be preferably inserted within a slightly oversized foamed elastomeric envelope which is bonded to the inside curvature of said shell. Air fill means are provided so that the user can inflate the member by introducing air to a plurality of communicating compartments within the member, and thereby both size the head gear assembly and cushion the head of the user against shocks.

3,668,705

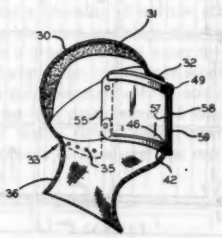
PROTECTIVE HELMET WITH HOOD

Walter E. Garbisch, 4215 W. Hawthorne Trace, Brown Deer, Wis.

Continuation-in-part of application Ser. No. 23,209, Mar. 27, 1970. This application Oct. 29, 1971, Ser. No. 193,635

Int. Cl. A61f *9/04;* **A42b** *1/18*

U.S. Cl. 2—10 **9 Claims**



A helmet has an integral hood which fits over the neck, and part of the shoulders of a person wearing the helmet. A transparent, double-walled face shield is pivotally attached to the hood to protect the face of the wearer of the helmet.

3,668,706

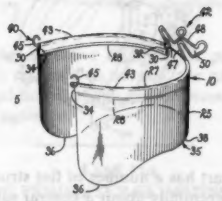
SHIELD ATTACHMENT FOR SAFETY HELMETS

Willie Velasquez, 311 North Effie, Fresno, Calif.

Filed June 10, 1970, Ser. No. 44,982

Int. Cl. A61f *9/00*

U.S. Cl. 2—10 **5 Claims**



A shield attachment for safety helmets and the like having front and back portions and a brim circumscribing a lower edge of the helmet providing a band of shielding material and a wire frame selectively detachable suspending the band from the brim of either the front or back portions of the helmet in wrap-around relation to the head of a wearer of the helmet so as to provide additional protection for the face and/or back of the neck of the wearer.

3,668,707

LADY'S HEADPIECE

Gathalee H. Williams, 2808 35th Street, Astoria, N.Y.

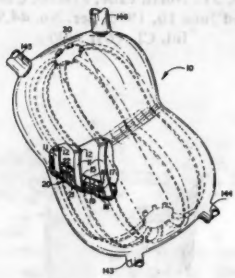
Filed Nov. 9, 1970, Ser. No. 87,839

Int. Cl. A42b *1/16;* **A42b** *5/00*

U.S. Cl. 2—207 **2 Claims**

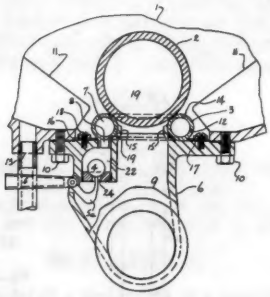
The headpiece disclosed herein is constituted of a sheath in which is slidably mounted a spring headclip. The central portion has a length materially greater than that of the clip so that the latter has a range of movement which permits of many variations in the lengths of the sheath beyond the ends of the clip, thereby enabling the accomplishment of many different dress effects.

3,668,708
ARTIFICIAL HEART
James A. Tindal, Gardena, Calif., assignor to North American Rockwell Corporation
Filed Dec. 23, 1969, Ser. No. 887,566
Int. Cl. A61f 1/24
U.S. Cl. 3—1 8 Claims



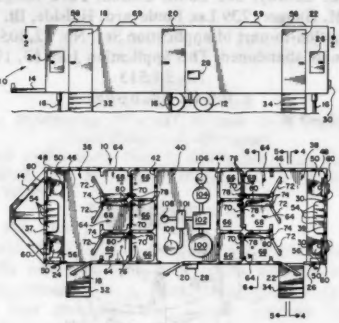
An artificial heart has a number of flat structural members arranged circumferentially about a central support. An inner layer of material confines blood to chambers of the artificial heart and an outer layer of material, which fully encloses the flat structural members, defines cavities between the inner layer of material and the outer layer. Fluid is pumped into the cavities for expanding the structural members to cause heart pumping action in response to measured values of preselected blood chemistry parameters. The structural members contact to their original positions to complete the pumping action.

3,668,709
LIQUID RESERVOIR
David Harold Sharp, 318 Linnet Crescent, Strathmore, Quebec, Canada
Filed Dec. 1, 1970, Ser. No. 93,986
Int. Cl. E03d 3/00, 3/10
U.S. Cl. 4—28 7 Claims



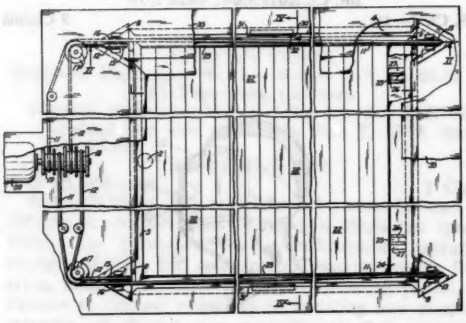
A discharge arrangement for a liquid reservoir such as a toilet cistern, in which the cistern is of an airtight type. The arrangement of the present invention is that the cistern is provided with a liquid outlet port with a compressible seat surrounding the port. The seat includes a liquid passageway with a liquid inlet hole, a vent hole and a liquid outlet hole. Sealing means, such as floatable ball, is adapted to mate in sealing arrangement with the seat. There is also provided suitable means for preventing the seal from coming into sealing engagement with the seat during discharge from the cistern. In the case of manual operation, means such as a handle is employed for initiating liquid discharge from the cistern.

3,668,710
SHOWER FACILITY
Joseph F. Dowd, P.O. Box 92, Hatch, N. Mex.
Filed Feb. 23, 1971, Ser. No. 118,071
Int. Cl. A47k 3/22
U.S. Cl. 4—145 7 Claims



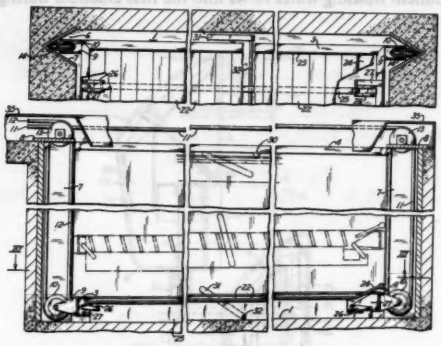
A shower facility mounted on a wheeled frame having towing and safety equipment for transporting the facility by a powered vehicle from place to place over public roadways. The facility is divided into a central utility section and two end shower sections. The utility section contains the equipment necessary to supply water and power to the shower sections with the shower sections each containing a plurality of individual shower units. Each shower unit is divided into a dressing unit and a shower stall and is provided with a coin-operated means which can spray shower water and disinfectant into the shower stall and can actuate a heat lamp to warm the dressing room.

3,668,711
SWIMMING POOL COVER AND RESCUE DEVICE
Charles J. Liermann, 3591 School Road, Murrysville, Pa., and Joseph G. Moore, 200 Fairview Road, Fox Chapel Borough, Pa.
Filed Jan. 21, 1971, Ser. No. 108,278
Int. Cl. E04h 3/16, 3/18
U.S. Cl. 4—172.13 9 Claims



A vertically movable frame fits around the inside of a swimming pool and is normally located at its bottom. Extending across the frame is a plurality of parallel slats pivotally mounted in the opposite sides of the frame on horizontal axes. While the frame is at the bottom of the pool the slats are disposed edge to edge in a common plane to form a floor. Means are provided for raising the frame to the top of the

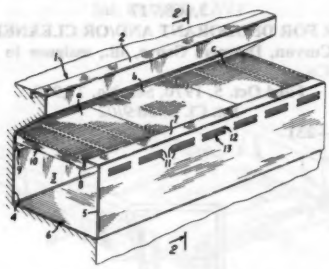
pool, during which the slats pivot on their axes so that they are turned on edge. At the top of the pool the slats are



turned back into a common plane to form a solid cover for the pool.

3,668,712
PERIMETER SKIMMING GUTTER FOR SWIMMING POOLS

William J. Baker, 403 Loudonville Road, Albany, N.Y.
Filed Jan. 18, 1971, Ser. No. 107,186
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.17 **22 Claims**

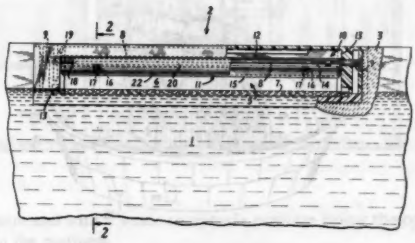


A perimeter skimming gutter for swimming pools is provided including a gutter conduit for disposition about the perimeter of a swimming pool and adapted to carry water at a level below a predetermined level of water in the swimming pool, a retaining wall on the pool-side of the conduit, over the top of which wall water may flow from the pool into the gutter conduit, and a plurality of narrow elongated substantially horizontally disposed openings through the wall at a height to maintain a predetermined water flow, the top of the wall being spaced above the openings at a height to retain the pool water within the pool perimeter at water flows, wave actions and surges up to a predetermined maximum, while allowing excessive water flows, wave actions and surges beyond such maximum to flow over the top of the wall into the gutter conduit.

3,668,713
FLUID FLOW AND/OR FLUID PRESSURE RESPONSIVE GATE WEIR

William H. Baker, 403 Loudonville Road, Albany, N.Y.
Filed Jan. 18, 1971, Ser. No. 107,187
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.17 **30 Claims**

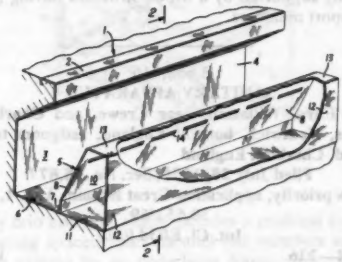
A fluid flow and/or fluid pressure responsive gate weir for the water outlet of swimming pools is provided, which responds to an increase in fluid flow through and/or fluid pressure in the weir, due to a flow surge or other condition that raises the water level of the pool at the weir, to close the



outlet. When the excessive flow and/or pressure condition has subsided, or returned to normal, the gate weir responds to the diminished flow through and/or pressure in the weir to open the outlet again.

3,668,714
NONFLOODING PERIMETER SKIMMING GUTTER FOR SWIMMING POOLS

William H. Baker, 403 Loudonville Road, Albany, N.Y.
Filed Jan. 18, 1971, Ser. No. 107,188
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.17 **28 Claims**



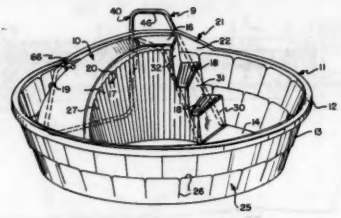
A nonflooding perimeter skimming gutter for swimming pools is provided, including a first gutter conduit for disposition about the perimeter of a swimming pool, and adapted to carry water at a level below a predetermined level of water in the swimming pool, a retaining wall on the pool-side of the first gutter conduit over the top of which wall a skimming flow of water may run from the pool into the first gutter conduit, a second gutter conduit adapted to carry water at a level below a predetermined level of water in the first gutter conduit, and a fluid flow connection between the two gutter conduits at such level and below the top of the retaining wall allowing water flow from the first gutter conduit into the second gutter conduit whenever the water level on the first gutter conduit reaches the fluid flow connection, thereby inhibiting filling of the first gutter conduit appreciably above such level.

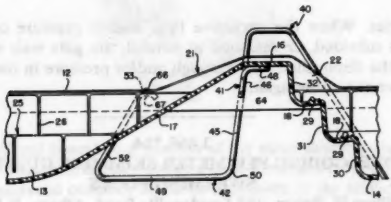
3,668,715
POOL STRUCTURE WITH BUILT-IN EXTERNALLY SUPPORTED STEP-SLIDE

Ascher Chase, Norfolk, Va., assignor to General Foam Plastics Corp., Norfolk, Va.
Filed Feb. 5, 1971, Ser. No. 113,023
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172 **11 Claims**

A molded tub-like structure, with a peripheral flange, having an integrally molded sliding surface projecting well above

the peripheral flange thereof and having integrally molded steps is disclosed herein. The tub, sliding surface, and steps are unitarily formed of comparatively lightweight thermoplastic sheet material. An elevated platform is disposed between the sliding surface and steps, and it is reinforced and structurally supported by a tripod structure having plural tubular support members.



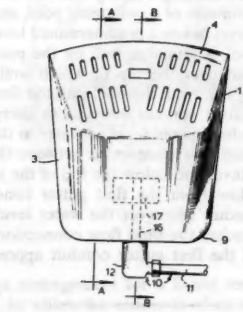


3,668,716

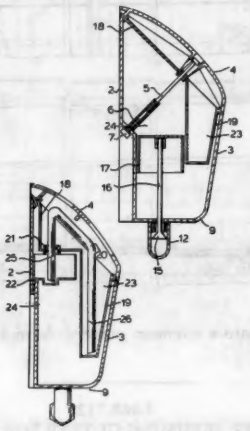
SANITARY APPARATUS

James O'Hara, Willaston, near Crewe, and Charles Lewis Gibbins, Nantwich, both of England, assignors to Calmic Limited, Cheshire, England

Filed July 28, 1970, Ser. No. 58,877
Claims priority, application Great Britain, Aug. 1, 1969, 38,652/69
Int. Cl. E03d *9/02*
U.S. Cl. 4—226 **10 Claims**



The invention provides a deodorizing apparatus in which a flow of air generated by movement of water at some stage in a flushing cycle of a urinal, water-closet basin or the like convenience is directed into a vessel capable of receiving a liquid and thence passes upwardly through the shorter leg of a syphon tube and downwardly through the longer leg of the syphon tube to bubble from the longer leg of the syphon tube through a deodorant liquid contained in a second vessel from which it emerges to deodorize the surrounding atmosphere. The two vessels are disposed in respective chambers defined by a common container and isolated from one another by a partition through which the syphon tube passes. In one embodiment flushing water flows into the first chamber during a flush and drains therefrom at the end of a flush. In another embodiment an open-bottomed container adapted to be disposed in a flushing system is connected to the first chamber.

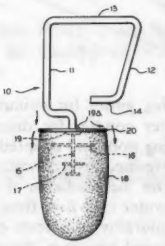


3,668,717

HANGER FOR DEODORANT AND/OR CLEANER BARS

Frank J. Curran, Downers Grove, Ill., assignor to Frank J. Curran Co.

Filed Oct. 5, 1970, Ser. No. 77,919
Int. Cl. E03d *9/02*
U.S. Cl. 4—231 **7 Claims**



A hanger for water soluble toilet deodorant bars having a hook shaped upper portion for attachment and a lower portion embedded within a deodorant bar. A plastic plate overlies the upper portion of the deodorant bar to retard washing away of the bar.

3,668,718

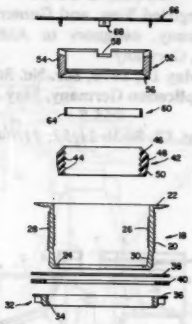
DRAIN CONNECTION

Casper Cuschera, 31650 Nedinah Street, Hayward, Calif.

Filed Aug. 24, 1970, Ser. No. 66,262
Int. Cl. E03c *1/26*
U.S. Cl. 4—288 **7 Claims**

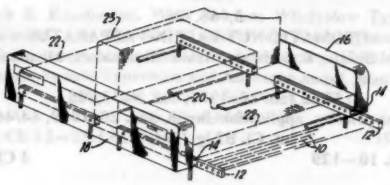
A drain for showers or the like which eliminates the need for conventional caulking materials. An internally and externally threaded member found in most drains is modified adjacent its lower internal end, and between such member and

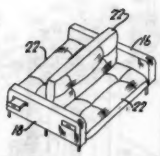
a drain pipe there is provided a specially designed gasket. The internal threads of the member adjacent its upper end



receive a nut, the latter bearing on the upper end of the gasket, urging the latter into sealing engagement between the pipe and drain member.

3,668,719
CONVERTIBLE SOFA BED
Addie B. Romero, New Iberia, La., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Oct. 9, 1970, Ser. No. 79,509
Int. Cl. A47c *17/14*
U.S. Cl. 5—17 **1 Claim**

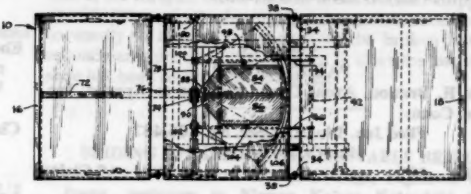




A double bed is convertible into twin sofas having a common back and disposed back to back. Headboards and footboards of the bed form end arm supports for the sofas.

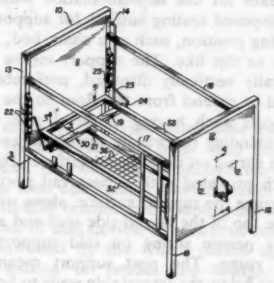
3,668,720
MATTRESS SUPPORT STRUCTURE
Justin J. Wetzler, 703 Sheridan Road, Evanston, Ill.
Filed Dec. 29, 1969, Ser. No. 888,357
Int. Cl. A61g *7/02*
U.S. Cl. 5—91 **6 Claims**

A mattress support structure of the type having a mattress thereon with the mattress having a central opening and means associated with the support structure and mattress to change the configuration of the opening from closed to open



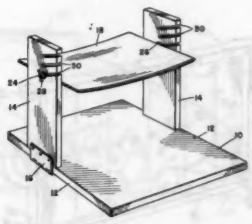
position and with a waste receptacle position below the opening in the mattress.

3,668,721
BABY CRIB
Levaughn Jenkins, 704 West Tichenor Street, Compton, Calif.
Filed Jan. 25, 1971, Ser. No. 109,479
Int. Cl. A47d *9/02, 9/04*
U.S. Cl. 5—109 **5 Claims**



A baby crib and bed which includes a mattress supporting means having spaced apart parallel rail members supported on rollers carried by an underlying frame and attached to electrically powered mechanism arranged to give said supporting means a planar reciprocating motion.

3,668,722
DUAL OCCUPANCY CRADLE
Bernie Edward Gallant, 860 Loring Street, San Diego, Calif.
Filed June 12, 1970, Ser. No. 45,709
Int. Cl. A47c *21/00, 9/00*
U.S. Cl. 5—327 **7 Claims**



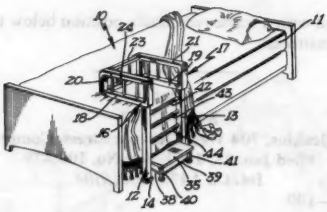
A cradle for use by two adults simultaneously. More specifically it is easily portable equipment for accomodation of one prone person and for supporting the weight of a superimposed prone adult person, the item consisting essen-

tially of an upholstered base with a hammock swung thereover. The item is collapsible and the height of the hammock is adjustable. The disclosure includes a foot rest or bench which may be used concurrently.

3,668,723
PATIENT RISER

Francis H. Bratton, Avon, Conn., assignor to Aprand, Inc., Avon, Conn.

Filed Jan. 14, 1971, Ser. No. 106,487
Int. Cl. A47c *21/00*
U.S. Cl. 5—327 **9 Claims**

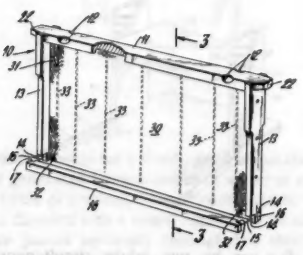


Support means for use in combination with a generally horizontally disposed seating surface for supporting persons while in a sitting position, such as a chair, bed, hospital bed, chaise lounge or the like. The support means comprises a pair of generally vertically disposed, preferably adjustable posts, adapted to extend from the floor to the support surface, these posts each having a lateral side wall secured thereto and extending rearwardly therefrom and adapted to flank a person sitting on the support surface. The lateral side walls are each provided with a base rail portion which is adapted to engage the support surface, along with a riser rail coupled to the top of the lateral side wall and adapted to be engaged by a person sitting on said support surface for assistance in rising. The post support means connected rigidly together below the lateral side walls to hold them rigid in the absence of a rigid rear wall, or a rigid rear wall means is coupled across the rear of the lateral side walls, and is adapted to be disposed in back of a person resting on the support surface. Preferably, the rigid rear wall means is provided with a base rail portion for engaging the support surface.

3,668,724
HONEYCOMB FOUNDATION

Young T. Cho, 118-23 83rd Avenue, Kew Gardens, N.Y.

Filed June 12, 1970, Ser. No. 45,791
Int. Cl. A01k *47/04*
U.S. Cl. 6—11 **8 Claims**

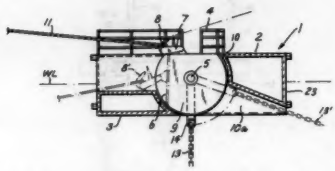


A honeycomb foundation resists honeycomb stretch and in a honeycomb frame, the honeycomb foundation has a movable bottom which may be adjusted to induce bees to make honeycomb over the entire foundation area.

3,668,725
MOORING BUOY

Eberhard Renz; Siegfried Voss, and Gunter Ecke, all of Bremerhaven, Germany, assignors to Aktiengesellschaft "Weser", Bremen, Germany

Filed May 11, 1970, Ser. No. 36,089
Claims priority, application Germany, May 10, 1969, P 19 23 955.5
Int. Cl. B63b *21/52, 21/04*
U.S. Cl. 9—8 R **10 Claims**

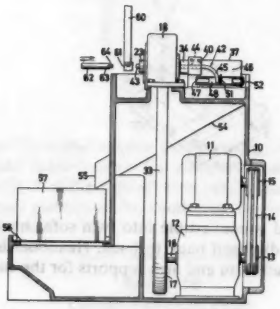


A mooring buoy wherein a horizontal pivot which is mounted in the center of an upright cylindrical buoyant body supports a freely pivotable carrier for one or more mooring hooks and is connected to the bottom by one or more chains. The carrier normally assumes an angular position in which the hook or hooks are located at the general level of the upper side of the swimming body to facilitate attachment of hawsers. The carrier is held in such position by one or more counterweights and/or by one or more floats which can form integral parts of the carrier.

3,668,726
AUTOMATIC NUT-TAPPING APPARATUS

Katsumi Shinjo, 8, 6-chome, Asahi Minamidori, Mishinariku, Osakashi, Japan

Filed Jan. 16, 1970, Ser. No. 3,405
Claims priority, application Japan, Jan. 20, 1969, 44/4607
Int. Cl. B23g *1/04, 1/16*
U.S. Cl. 10—129 **4 Claims**

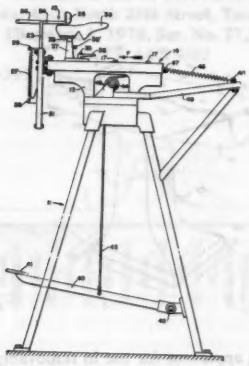


A bent tap in a nut-tapping apparatus is provided with an anti-friction sliding means arranged in parallel with the tap, which sliding means helps the tap to advance by the lead of its own screw threads during the tapping operation when it is engaged by the bent portion of the tap due to cutting moment.

3,668,727
MACHINE FOR LASTING SHOES

Thomas A. McCann, Via di Scorcola 15, 34100 Trieste, Italy

Filed Nov. 5, 1969, Ser. No. 874,120
Int. Cl. A43d *3/12*
U.S. Cl. 12—15 6 Claims

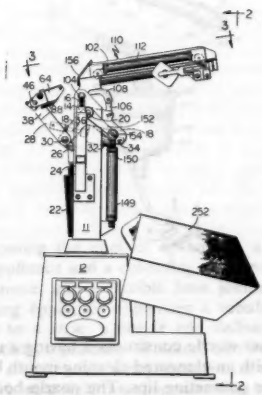


The present invention refers to a machine acting as a mechanical shoehorn to put lasts in shoes such as prefabricated moccasins, shoes with stitched insoles and other types which must be placed on a last, the shoehorn being foot operated.

3,668,728
MACHINE FOR DISASSEMBLING A SHOE FROM A LAST

Jacob S. Kamborian, West Newton; Wladyslaw Typrowicz, Belmont, and Gordon S. Anderson, Framingham, all of Mass., assignors to Jacob S. Kamborian, West Newton, Mass., by said Typrowicz and Anderson

Filed Feb. 9, 1971, Ser. No. 113,831
Int. Cl. A43d *3/10*
U.S. Cl. 12—15.1 19 Claims

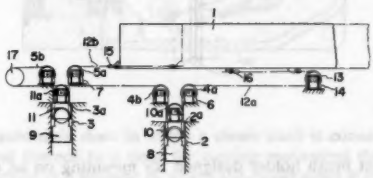


A machine for disassembling a shoe from a last supported bottom-up by concomitantly causing a pad to press against and raise the quarter of the shoe above the bottom of the last and push the raised quarter toewardly over the bottom of the last and causing a bar to move downwardly against the bottom of the forepart of the shoe to break the last. Grippers are provided that grip the forepart portions of the shoe and move toewardly to remove the shoe from the broken last and a second bar is provided that is raised to close the last after the shoe has been removed from the last.

3,668,729
SLIDING APPARATUS OF A MOVABLE BRIDGE

Kunio Mori, Sohka, and Yoshio Shirage, Fujisawa, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 28, 1970, Ser. No. 76,068
Claims priority, application Japan, Dec. 28, 1969, 44/105076
Int. Cl. E01d *15/10*
U.S. Cl. 14—43 6 Claims

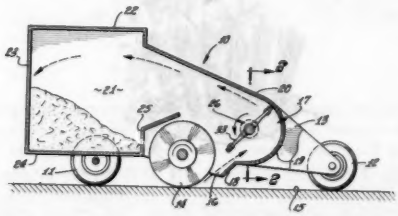


There is disclosed a bridge extendable away from, and retractable back towards, a quay, and including winch means, at least one flexible connection for extending the bridge and at least one flexible connection for retracting the bridge, said flexible connections coupling the winch means to the bridge, one of said flexible connections being wound and the other unwound by the winch means upon operation thereof to extend or retract the bridge, and weights suspended from said flexible connections between the winch means and the bridge. When a boat is secured to the outboard end of the extended bridge, movement of the weights allows the bridge to follow movement of the boat.

3,668,730
ROAD SWEEPER CONVEYOR

Garred N. Scharmann, Pomona; Kermit W. Warn, Yorba Linda, and Donald G. Mortensen, Upland, all of Calif., assignors to Wayne Manufacturing Company, Pomona, Calif.

Filed Sept. 4, 1970, Ser. No. 69,853
Int. Cl. E01h *1/04*
U.S. Cl. 15—83 3 Claims



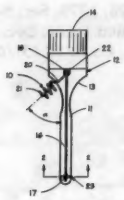
A rotary road sweeper conveyor operable within a shroud is provided with debris displacement units in the form of spaced longitudinally flexible arms interconnected by terminal squeegees so that large or stiff debris pieces displaced

by the squeegees may pass through the open spaces between the flexible arms.

3,668,731
PAINT BRUSH HOLDER

Herbert J. McBride, 2936 Pariso Way, La Crescenta, Calif.

Filed July 20, 1970, Ser. No. 56,619
Int. Cl. A46b *5/02, 17/02*
U.S. Cl. 15—146 **2 Claims**

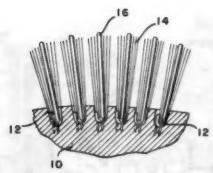


A paint brush holder designed for mounting on an extension handle to allow painting of high places without the use of a ladder. It employs a unitary spring member securable to the handle of the paint brush and includes a helical portion which engages the threads of standard extension handles. The helical thread portion is positioned such that the brush is supported at the throat of the paint brush handle in approximately the same position as a normally held brush is supported. The spring characteristic of the member provides a flexibility comparable to the human wrist in painting operation. The body of the holder lies along the brush handle and is out of the way so that the brush may be used in a conventional hand-held manner without removal or interference. The helical portion acts as a holder for the brush when removed from an extension handle whereupon the helical portion can engage the lip of a paint can or pail.

3,668,732
HAIR BRUSH

Robert A. Lardenois, Hermes (Oise), France

Filed May 8, 1970, Ser. No. 35,867
Int. Cl. A46b *3/16*
U.S. Cl. 15—159 A **3 Claims**

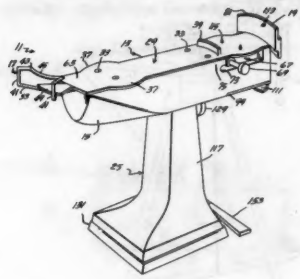


Hair brush having a solid rigid base member with a plurality of spaced recesses formed therein, each recess having a plurality of tufts of fine bristles being bent back upon themselves and a single thick strand of a length greater than the length of tuft of fine bristles.

3,668,733
SHOE HOLDING APPARATUS

Raymond M. Ring, Seminole, Fla., assignor to Aloma Products, Inc., Altamonte Springs, Fla.

Filed Mar. 1, 1971, Ser. No. 119,459
Int. Cl. A47l *23/18*
U.S. Cl. 15—267 **4 Claims**



A shoe-holding apparatus for use in removably supporting a shoe for repairing, polishing, or the like, including an elongate frame having an upper surface adapted to supportingly engage the undersurface of the shoe sole. A shoe-gripping construction includes convergingly operative forward and rearward grip members for clampingly engaging respectively the forward sole edge at the shoe toe and the heel edge at the back of the shoe. The forward grip member is operative through a leaf spring and a helical tension spring, causing compound gripping action on the shoe sole toe edge in directions both rearwardly and downwardly of the shoe sole supporting frame. The shoe gripping mechanism and action is selectively variable in position and tension for accommodating various shoe shapes and sizes.

3,668,734
VACUUM CLEANER SHAG RUG NOZZLE CONSTRUCTION

Max L. Fairaizl, Chagrin Falls, Ohio, and John F. Schneerman, Winfield, Ill., assignors to Health-Mor, Inc., Chicago, Ill.

Filed Oct. 21, 1970, Ser. No. 82,565
Int. Cl. A47l *9/02*
U.S. Cl. 15—328 **3 Claims**

A vacuum cleaner nozzle construction having a usual nozzle body formed with an elongated cleaning mouth between a pair of rug surface contacting lips. The nozzle body is connected to a usual source of cleaning suction. A skid having a pair of spaced parallel sledlike runners extends below the nozzle lips transversely beneath the nozzle body raising the nozzle lips a sufficient distance above a deep pile shag rug being cleaned so that the nozzle lips will not seal into the

pile, thus allowing air to circulate through the pile for removal of dirt. The nozzle and skid are pushed through the shag rug, the suction stands the rug fibers upright for cleaning and for uniform appearance of pile.

3,668,735

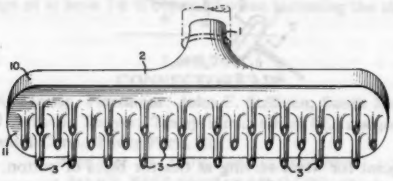
VACUUM CLEANER HEAD FOR CLEANING AND COMBING SHAG CARPETING

Fred W. Dupea, 4501 North 25th Street, Tacoma, Wash.

Filed Oct. 1, 1970, Ser. No. 77,277

Int. Cl. A47l *9/02*

U.S. Cl. 15—397 **2 Claims**



Vacuum cleaner head in the form of a rake for cleaning and combing the pile of a shag rug, having a hollow stem, a hollow body and a number of hollow rake-like fingers with elliptical cross-sections extending downward from the body section parallel to one another and arranged in a number of off-set rows. The head when moved back and forth through the pile in the fashion of a rake will lift and untangle the individual strands exposing the dirt deep within the carpet to the cleaning action of the vacuum air stream.

3,668,736

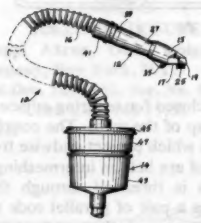
GROOMING AND CLEANING DEVICE

Nicholas R. Loscalzo, Melville, N.Y., assignor to Petcraft Industries Incorporated, Melville, N.Y.

Filed Apr. 13, 1970, Ser. No. 27,721

Int. Cl. A47l *9/06*

U.S. Cl. 15—402 **3 Claims**



For grooming the coat of an animal, a device having a working appliance and a collecting appliance connected to a vacuum source, and a flexible hose joining the appliances. The working appliance comprises a tubular handle section connected to a hose, a nozzle end defining a substantially planar opening, a plurality of slotted ribs behind the opening to receive a removable currycomb and a removable depth-stop comprising a rigid member extending below the plane of the nozzle opening. The collecting appliance is a filter which includes a container enclosing a removable filter basket. The container has a base with a tubular vacuum port for connection to the vacuum source; the lid is similarly provided with a tubular opening but for connection to the flexible hose and the base and the filter basket are cooperatively flanged to support the filter basket.

3,668,737

AUTOMATIC DOOR CLOSER

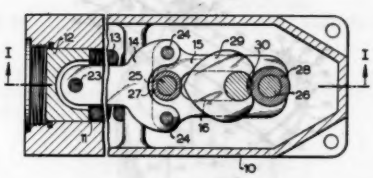
Horst Tillmann, Ennepetal-Voerde, Germany, assignor to Dorken & Mankel KG, Ennepetal-Voerde, Germany

Filed Nov. 6, 1969, Ser. No. 874,599

Claims priority, application Germany, Nov. 7, 1968, P 18 07 399.9

Int. Cl. F05f *3/20*

U.S. Cl. 16—55 **8 Claims**



An automatic door in which a closer shaft is connected at one end thereof to a door for turning movement therewith and carries in a housing in which the closer shaft is turnably mounted a cam fixed to the closer shaft. A pair of followers carried by a carriage are arranged to opposite sides of the shaft and cooperate with the cam to move the carriage in a first direction during turning of the shaft and cam to either side of a rest position in which the door is closed, and spring means cooperate with the carriage to be stressed to an increasing degree during movement of said carriage in this first direction, while damping means cooperate with the carriage to dampen the movement of said carriage in a direction opposite to said first direction.

3,668,738

DEVICE FOR MAKING A LONGITUDINAL CUT INTO THE NECK OF POULTRY

Jacobus G. Vertegaal, Boxmeer, Netherlands, assignor to Stork Amsterdam N.V., Amstelveen, Netherlands

Filed Feb. 26, 1970, Ser. No. 14,494

Claims priority, application Netherlands, Mar. 25, 1969, 6904551

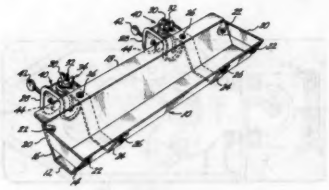
Int. Cl. A22c *21/00*

U.S. Cl. 17—11 **4 Claims**

A device for making a longitudinal cut into the back of the neck of poultry by means of a rotating disc provided along its circumference with outwardly protruding knives, separated by downwardly and outwardly protruding guide members the

whole cooperating with a fixed guide and having an inclined position with respect to the horizontal.

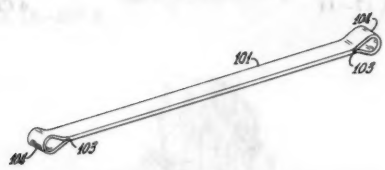
3,668,739
FISH CLEANING TROUGH FOR BOATS
Elbert G. Lewis, 10435 17th Street, Seattle, Wash.
Filed July 31, 1970, Ser. No. 59,945
Int. Cl. A22c *25/06*
U.S. Cl. 17—53 **2 Claims**



A fish-cleaning trough adapted to be easily mounted to or removed from the gunwale of a boat provides a convenient means of supporting a fish as it is cleaned during motions of a boat. The trough is suspended over the water as the fish are cleaned to facilitate disposal of wastes and it is partially open at the ends so that rinse water and organic wastes can easily run out, while the fish remains confined to the trough.

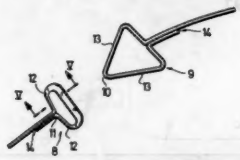
The trough is attached to the side of a boat by utilizing securing means including pivotal brackets, hinges, and/or adjustable clamps. Materials used are plastic, wood, galvanized metals, or other protected metals to avoid and/or to inhibit corrosion and rusting.

3,668,740
HIGH STRENGTH STRAP AND METHOD OF MAKING IT
Lee E. Pearson, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation
Filed Nov. 27, 1970, Ser. No. 93,190
Int. Cl. B32b *5/12*; B65d *63/00*; B65j *1/22*
U.S. Cl. 24—16 PB **18 Claims**



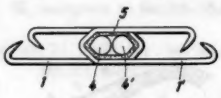
A high strength non-corrodible strap of composite materials for support or securement of articles and a method of making the strap. The strap is reinforced with filaments, such as glass fibers, looped into a continuous band having two sides merged in the middle to form an elongated body portion between end connecting loops. The matrix material, such as polyester resin, surrounds and protects the filaments from abrasion and corrosion while the filaments impart high strength to the strap. Loop-shaped thimbles can be fabricated into the loops to provide bearing surfaces at the connections. The strap with associated guides is particularly useful as a hold down strap to anchor underground storage tanks.

3,668,741
WIRE JOINTS
Willi Grossbudde, Holkesode 23, 56 Wuppertal-Langerfeld, Germany
Filed Sept. 28, 1970, Ser. No. 76,055
Claims priority, application Germany, Sept. 30, 1969, P 19 49 203.6
Int. Cl. B65d *63/10*
U.S. Cl. 24—27 **1 Claim**



A joint for wires serving as ties for bales of cotton, wool, synthetic fibers and the like, the wire ends to be connected each comprising a rebent portion forming loops which define male and/or female members to be hooked one in to the other, the joint having means to reinforce the male member so that it withstands the maximum tensile stress applied to the tie without disengaging from the female member, the distal ends of the wire preferably being secured to the wire length by spot welding.

3,668,742
COUPLING FOR WEBS
Otto Bartmann, 6 Waldstr., Birgel, Duren, Germany
Filed July 23, 1970, Ser. No. 57,446
Claims priority, application Germany, July 24, 1969, G 69 29 255.3
Int. Cl. F16g *3/02*
U.S. Cl. 24—33 C **9 Claims**

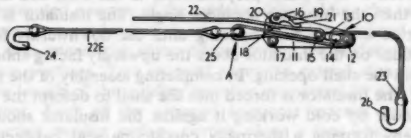


A coupling is disclosed for securing adjacent end web portions without overlap of the webs. The coupling includes series of spaced loops which project endwise from the end portions of the webs and are held in intermeshing relationship by a connector which is threaded through the intermeshing loops and comprises a pair of parallel rods which are freely movable related to one another and convexly curved in cross-sectional profile at least where the rods make contact with each other and which are enclosed in a resilient tube.

3,668,743
STRAP TENSIONING DEVICES
Richard Walter Roberts, Tarporley, England, assignor to B. Dixon-Bate Limited, Chester, Cheshire, England
Filed Nov. 24, 1970, Ser. No. 92,493
Claims priority, application Great Britain, Nov. 25, 1969, 57,520/69
Int. Cl. A43c *11/00*; A44b *21/00*; A62b *35/00*
U.S. Cl. 24—68 CT **3 Claims**

A tensioning device for a strap which is used to secure cargo in position and in which the tensioning device has at

one end a slidable locking means and at the other end a pivotal locking means and with the strap wound around and



through the tensioning device such that a mechanical advantage of at least 3:1 is obtained when tautening the strap.

3,668,744

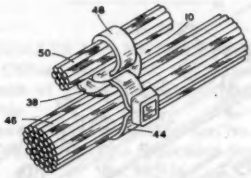
CONNECTOR CLIP

Roy A. Moody, Flossmoor; John F. Sullivan, South Holland, and Arlie J. Thayer, Tinley Park, all of Ill., assignors to Panduit Corp., Tinley Park, Ill.

Filed Oct. 21, 1970, Ser. No. 82,699

Int. Cl. B65d *63/06*; A44b *21/00*

U.S. Cl. 24—73 PB **16 Claims**



A connector clip for linking a pair of looped straps holding bundles of wires or similar items including, a solid walled passage, and an open walled passage, the open walled passage being adapted to clip onto a primary strap in an already looped position after which the second strap is placed longitudinally through the closed passage prior to looping around a second bundle of wires.

3,668,745

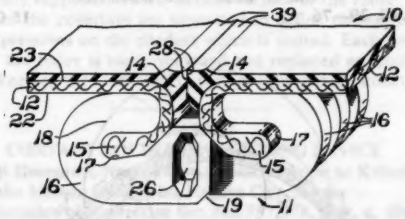
SEALING CLOSURE

Carroll P. Krupp, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Dec. 18, 1969, Ser. No. 873,760

Int. Cl. A44b *19/32*

U.S. Cl. 24—205.1 **9 Claims**



A sealing closure between two margins of sheet material in which each margin has a sealing strip continuously applied to one face of the margin at a position spaced from the edge thereof and interlocking teeth of a slide fastener fastened to the edge of the margin at the sides of the teeth so that the edges are turned under and the teeth overlie the other face of the margin when the slide fastener is in the locked position. As the slide fastener closes, sealing lips on the sealing strips are pulled into engagement and resiliently oppose the forces produced by the turning under of the edges of the margins.

3,668,746

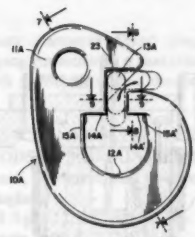
HOOK HAVING SLOTTED ENTRY

Roger L. Gower, Room 302, 1191 Jefferson Davis Highway, Arlington, Va.

Filed Nov. 18, 1970, Ser. No. 90,736

Int. Cl. A43c *11/08*; A44b *13/00*

U.S. Cl. 24—230.5 **4 Claims**



Hook means for fastening a chain-bound article securely in connected position, access to the throat of the hook being gained through a slotted entry of diameter sufficiently greater than the diameter of the bar stock of the chain with which said hook is used to permit clearance of a link of such chain through said slotted entry, and thus permit rapid connection and disconnection thereof while minimizing the possibility of accidental disengagement of said hook and said chain.

3,668,747

SNAPLOCK FOR SAFETY BELTS

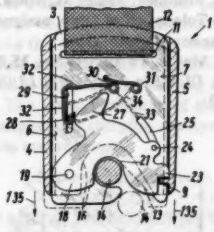
Gustav Ockel, Norderstedt, Germany, assignor to Firma Klippan GmbH, Kohfurth, Germany

Filed Dec. 3, 1970, Ser. No. 94,678

Claims priority, application France, Dec. 8, 1969, 6942338

Int. Cl. A44b *13/00*, *19/00*

U.S. Cl. 24—241 **8 Claims**



A snap or clip-on lock for safety belts particularly suitable for motor vehicles which is capable of being clipped onto a bow or a hoop locked to the vehicle body consisting of a movable lock housing and a locking plate slidably disposed in the housing and including a recess for receiving the bow. The locking plate also includes one or more arresting hooks on the sides of the plate, the arresting hooks being pivotably mounted against the plate and including a spring urging the arresting hooks into their locking position. The lock housing

includes an abutment which prevents pivoting of the arresting hooks into a release position while the arresting hooks are locked to the bow.

3,668,748

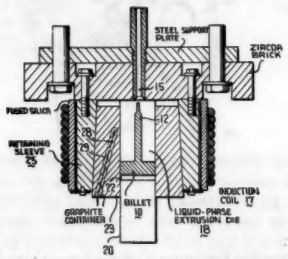
PROCESS FOR PRODUCING WHISKER-REINFORCED METAL MATRIX COMPOSITES BY LIQUID-PHASE CONSOLIDATION

Amarnath P. Divecha, Falls Church, Va.; Paul J. Lare, Bowie, Md.; Fred Ordway, Jr., Bethesda, Md.; Robert A. Hermann, Rockville, Md.; Orville B. Van Blaricon, Alexandria, and Henry Hahn, Fairfax, both of Va., assignors to American Standard Inc., Falls Church, Va.

Filed Sept. 12, 1969, Ser. No. 857,376

Int. Cl. B23p *17/00;* **B22f** *3/24*

U.S. Cl. 29—419 **10 Claims**



A fiber-reinforced metal composite of desired shape is produced by consolidating a mixture of the metal matrix and the fibers under pressure with the mixture maintained at a temperature in which the matrix system is partly in the liquid phase and partly in the solid phase, utilizing a liquid-phase extrusion die cavity of predetermined volume. With approximately one quarter of the matrix system in the liquid phase, and containing up to approximately 50 percent by volume of oriented fibers or whiskers, the material of the composite billet is extruded into the die cavity in order to consolidate the composite billet to the volume of the die cavity, in which the desired shape is to be formed. Heating is discontinued when the cavity is filled completely by the semi-molten metal fiber composite.

3,668,749

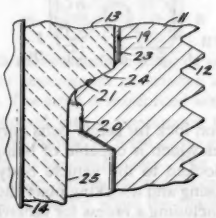
SPARK PLUG SEAT

Richard S. Podiak, Maumee; James M. Mack, and Michael A. Bretsch, both of Toledo, all of Ohio, assignors to Champion Spark Plug Company, Toledo, Ohio

Filed May 6, 1970, Ser. No. 35,043

Int. Cl. F23q *3/70;* **H01t** *13/00*

U.S. Cl. 29—25.12 **7 Claims**



A method for forming a gasketless seat between an insulator and a shell in a spark plug. A downwardly facing shoulder is formed on the insulator to define an angle within a range between 20° and 45° to a plane perpendicular to the insulator axis. An upwardly facing shoulder is formed within a reduced opening in the shell to define an angle within a range between 0° to a plane perpendicular to the shell axis and 5° less than the insulator shoulder angle. The insulator is then inserted into the shell opening until the downwardly facing shoulder on the insulator abuts the upwardly facing shoulder within the shell opening. In completing assembly of the spark plug, the insulator is forced into the shell to deform the shell shoulder by cold working it against the insulator shoulder, thereby forming a thermally conducting seat between the shell and the insulator.

3,668,750

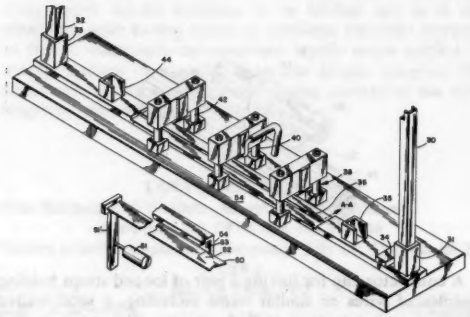
AUTOMATIC PROCESSING EQUIPMENT FOR MICROELECTRONIC CIRCUITS

Lewis L. McAllister, Marion, and Wencil D. Popek, Cedar Rapids, both of Iowa, assignors to Collins Radio Company, Dallas, Tex.

Filed Jan. 11, 1971, Ser. No. 105,394

Int. Cl. B23p *23/04, 21/00*

U.S. Cl. 29—33 M **18 Claims**



Equipment for automatically processing microelectronic circuits for application in circuits defined on printed circuit boards and the like. A plurality of work stations apply insulative backing to the circuit cases, trim and form the leads, and cold-flow solder ribbon about the formed leads. Circuits may be automatically loaded into the equipment, processed, and unloaded following the completed processing.

3,668,751

APPARATUS FOR CHAMFERING TABLETS

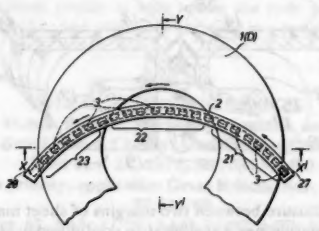
Haruji Saeki, Suita, Japan, assignor to Shionogi & Co., Ltd., Osaka, Japan

Filed June 29, 1970, Ser. No. 50,400

Claims priority, application Japan, June 30, 1969, 44/52031; Aug. 28, 1969, 44/68424; May 11, 1970, 45/40406

Int. Cl. B23d *67/00;* **B24b** *7/00*

U.S. Cl. 29—76 **15 Claims**



An apparatus for chamfering the sharp edges of pharmaceutical tablets. The apparatus has abrading means having

at least two moving surface portions having a grinding or abrading surface which is sufficiently hard and rough to scrape the tablets. A guiding member is disposed above the surface portions which has a channel interconnecting inlet and outlet openings and having a cross section permitting the unobstructed passage of the tablets while holding the tablets oriented in a predominantly upright yet slightly inclined position with one of the sharp edges toward the surface of the surface portions. Two grooved segments extend along parts of the length of the guiding member connected by a tubular segment. Each of the grooved segments extends across a respective moving surface portion along a line which intersects the direction of movement of the surface portion at an angle other than a right angle. The portions of the channel extending through each of the grooved segments is a groove opening out of the segment and opposed to the corresponding grinding and abrading surface portion and spaced therefrom to leave a small clearance between the segment and the surface portion. One of said grooved segments orients the tablets with one of the circular edges against the corresponding surface portion and the other of the grooved segments orients the tablets with the other of the circular edges against the corresponding surface portion. The tubular portion has the portion of the channel extending therethrough twisted, if necessary, to change the orientation of the tablets from the position with one edge against the surface portion to the position with the other edge against the surface portion.

3,668,752

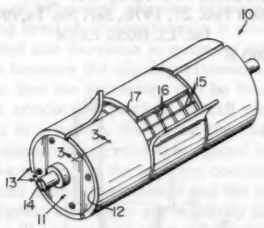
COATING ROLLER AND METHOD OF MANUFACTURE

Edward A. Clifton, Englewood, and Artemio P. Carrandi, Dayton, both of Ohio, assignors to Dayco Corporation, Dayton, Ohio

Continuation-in-part of application Ser. No. 6,623, Jan. 28, 1970, now abandoned. This application Sept. 2, 1970, Ser. No. 70,926

Int. Cl. B21b *31/08*

U.S. Cl. 29—124 **7 Claims**



A coating roller and method of manufacture is disclosed wherein the roller is comprised of a magnetic cylinder and a plurality of magnetically attracted roller coverings individually supported on the outside surface of the roller. The edges of the coverings are separated to define distinct coating impressions on the product which is coated. Each covering of the roller is easily removed and replaced as required while keeping the remaining coverings substantially intact.

3,668,753

CONTACT ROLLER IN A SANDING DEVICE

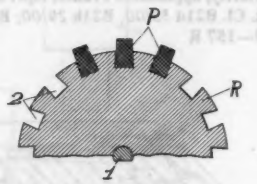
Katsuji Hasegawa, Nagoya City, Japan, assignor to Kabushiki Kaisha Meinan Seisakusho, Nagoya City, Japan

Continuation of application Ser. No. 757,278, Sept. 4, 1968, now abandoned. This application Sept. 14, 1970, Ser. No. 72,137

Int. Cl. B24b *21/14*

U.S. Cl. 29—121 **1 Claim**

In a sanding device, a contact roller is steel material having grooves provided at an equal pitch and at an angle in relation to a longitudinal axis of the contact roller on an outer peripheral surface thereof and each having a larger width at a bottom portion thereof in comparison with that of a top portion; and pressure elements fitted displaceably into said grooves for applying pressure to a material to be processed in contact with a belt sander mounted thereon.



3,668,754

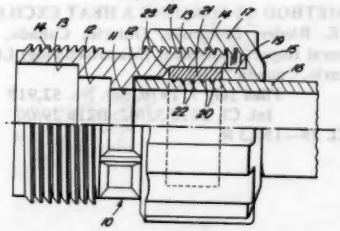
METHODS OF FORMING PIPE JOINTS

Derek Walter Boast, Penhurst, Hill Crescent, Totteridge, London, No. 20, England

Filed Apr. 22, 1970, Ser. No. 30,834

Int. Cl. B23p *11/02*

U.S. Cl. 29—157 **2 Claims**



A method of forming a pipe joint, which pipe joint is of the kind in which an external peripheral flange is provided on the pipe and a nut or other retaining device encircles the pipe so as to abut the flange (or a member in engagement therewith), which nut or retaining device can be engaged with a threaded or other suitably shaped part of the fitting to which the pipe is to be joined in such manner that the flange is trapped between the nut or retaining device and part of the fitting. The method comprises forming the flange as an annular element which is expanded by heating and is then shrunk on to the pipe. The inner periphery of the annular element and the outer periphery of the pipe are formed with inter-engaging projections and recesses.

3,668,755

BONDING OF METALLIC MEMBERS WITH LITHIUM AND LITHIUM CONTAINING ALLOYS

Earl I. Larsen, Indianapolis, Ind., and Richard H. Krock, Weston, Mass., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Jan. 25, 1971, Ser. No. 109,329

Int. Cl. B32b *15/16*, *15/20*

U.S. Cl. 29—199 **42 Claims**

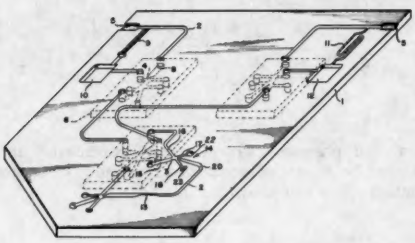
Bonding of copper and copper containing alloys or silver or silver containing alloys to copper or copper alloys or to silver or silver containing alloys through the use of lithium or a lithium containing alloys.

3,668,756

METHOD FOR MAKING FLUID CHANNELS

Andre A. Wieme, Zwevegem, Belgium, assignor to N. V. Bekaert S. A., Zwevegem, Belgium

Filed Apr. 18, 1969, Ser. No. 817,431
Claims priority, application France, Apr. 23, 1968, 149016
Int. Cl. B21d *53/00*; B21k *29/00*; B23p *15/26*
U.S. Cl. 29—157 R 7 Claims



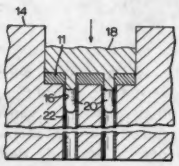
A method of making flow channels in fluid control devices comprising coining into the surface of the device a length of hard drawn wire having an appropriate form, and removing the length of wire from the channel thus formed.

3,668,757

METHOD OF FORMING A HEAT EXCHANGER

Otto E. Rieder, Etobicoke, Ontario, Canada, assignor to General Impact Extrusions (Manufacturing) Ltd., Toronto, Ontario, Canada

Filed July 7, 1970, Ser. No. 52,919
Int. Cl. B21d *53/02*; B21k *29/00*
U.S. Cl. 29—157.3 R 4 Claims



An improved method of forming a heat exchanger including the step of forming a plurality of heating tubes integrally with an end plate and by an impact extrusion process and connecting the interior passages of the tubes in a heat exchanger circuit.

3,668,758

BONDING OF METALLIC MEMBERS WITH ALKALI METALS AND ALKALI METAL CONTAINING ALLOYS

Richard H. Krock, 126 Conant Road, Weston, Mass., and Earl I. Larsen, 9565 Copley Drive, Indianapolis, Ind.

Continuation-in-part of application Ser. No. 109,329, Jan. 25, 1971. This application July 8, 1971, Ser. No. 160,931
Int. Cl. B32b *15/16*, *15/20*
U.S. Cl. 29—199 70 Claims

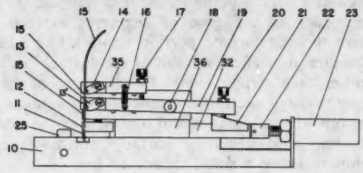
Bonding of copper and copper containing alloys or silver or silver containing alloys to copper or copper alloys or to silver or silver containing alloys through the use of alkali metal or alkali metal containing alloys.

3,668,759

CASSETTE HUB LEADERING HEAD

Trevor William Kendall, Ronkonkoma, N.Y., assignor to Dictaphone Corporation, Bridgeport, Conn.

Filed Mar. 12, 1970, Ser. No. 18,863
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 B 6 Claims



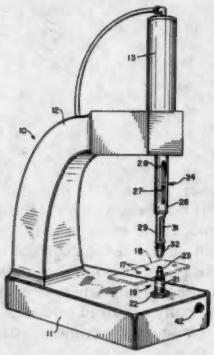
A device is provided for securing a length of leader tape from a supply thereof to a reel hub having a slot on its peripheral side wall. The hub is initially positioned on the base of the device with a segment of a leadering tape positioned adjacent the slot. A pair of spaced die members are mounted on the base and have vertically aligned apertures therein through which a supply of frangible rod is advanced. A shearing blade is slidably mounted in the device for movement between the die members and is reciprocated by an air cylinder between extended and retracted positions. Upon movement of the blade from its retracted position to its extended position, the blade shears the portion of the frangible rod between the die members and forces the sheared rod portion, with the tape adjacent the hub, into the slot in the reel hub.

3,668,760

AIR OPERATED TERMINAL INSERTION DEVICE

Stuart J. Biederman, Floral Park, and Walter E. Jezewski, Tuckahoe, both of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Feb. 27, 1970, Ser. No. 14,998
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 B 11 Claims



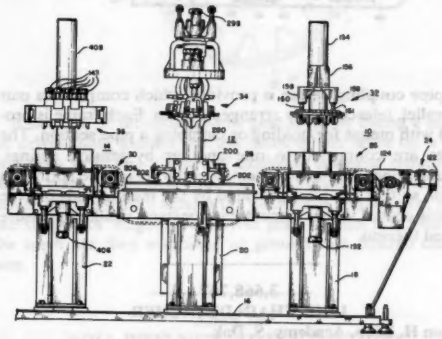
An air operated terminal insertion device comprising a first reciprocating member and a second reciprocating member which is attached to a double acting pneumatic cylinder and frictionally engages the first member concentrically to actuate the same. One of the members contains a stop which interacts with the other member to limit the axial movement therebetween. A pushrod is attached at one end to the second member and terminates at the other end in an inserter portion. The first member is provided with a transverse

slot through which the terminals are fed for insertion, and elastic means on this member provide support for the terminal immediately prior to insertion by the inserter portion of the pushrod.

3,668,761
MACHINE FOR MANUFACTURING ELECTRIC STORAGE BATTERIES

Richard A. Buttke; Anthony Sabatino; Daniel Orlando, all of Milwaukee, and William H. Behrens, Racine, all of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Original application Mar. 27, 1963, Ser. No. 268,359, now Patent No. 3,544,754. Divided and this application Sept. 4, 1970, Ser. No. 69,828
Int. Cl. H01m *37/00*
U.S. Cl. 29—204 D **9 Claims**



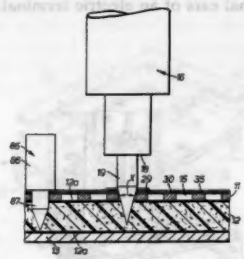
Apparatus for aligning conductive portions of adjacent cell element assemblies on opposite sides of battery partition walls so that an intercell weld can be made through those walls between the aligned conductive portions includes a plurality of pairs of bifurcated aligning extensions depending from an aligning head. A battery support is positioned below the aligning head and provision is made for producing relative movement between the aligning extensions and the battery support so that the extensions can be brought into engagement with conductive portions of cell element assemblies contained in a battery resting on the battery support. The pairs of extensions are relatively spaced in accordance with the relative spacing of the adjacent conductive portions of the battery cell element assemblies and the bifurcations in each pair of aligning extensions are relatively aligned so that the extensions will engage and align conductive portions of adjacent assemblies. Provision is also made for testing the position of the cell element assemblies in the battery as well as the position of the battery per se on the battery support. The testing arrangement is effective to produce a signal in the event of a completely misaligned battery or misaligned battery cell element assemblies.

3,668,762
PREPARATION OF ARTWORK MASTERS

Alfred Charles Clark, Conduit Lane, Woodham, Mortimer near Maldon, England

Filed Oct. 13, 1970, Ser. No. 80,379
Claims priority, application Great Britain, Oct. 13, 1969, 50,279/69
Int. Cl. H01r
U.S. Cl. 29—203 B **7 Claims**

There is provided apparatus and method for the preparation of artwork masters used for the manufacture of printed circuit boards. A grid having uniformly spaced perforations onto which a work sheet for the master is applied is used for proper alignment of pressure sensitive pads on the sheet, the pads being applied by a spiked tool adapted to be centered in and by the perforations and press the pads against the sheet.

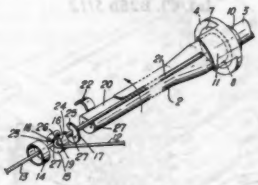


There is also provided a dispenser and running "conductor" lines between spaced pads on the work sheet.

3,668,763
WIRE STRIP AND WRAP BIT

Percy Leonard Micklewright, Sawbridgeworth, and Ernest Victor Scaddan, London, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed May 4, 1970, Ser. No. 34,015
Claims priority, application Great Britain, May 9, 1969, 23,745/69
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 DT **5 Claims**



A wire-wrapping bit cuts and strips a wire end and wraps a terminal in one operation using "free" ends of insulated wire (that is, not intended to be drawn up tight). The cutting elements are removed, and an easy-feed wire hold guide and length gauge are provided, whereby wire may be fed through the guide up to a striker flange on the shank of the bit, for determining the skinner length and the wire held against withdrawal by being trapped in the skinner plate. A collar surrounding the feed guide assists the feed and permits wire to be fed at 45° to the bit and prevents "snatch." An expanding bit shank, and a feed channel extending its length, both assist in ejection of the insulation after the wrapping operation.

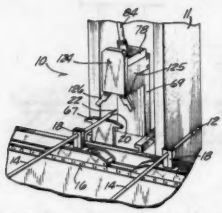
3,668,764
AUTOMATIC TERMINAL APPLICATOR FOR INSULATED NON-METALLIC IGNITION TYPE WIRES

Magnus Randar, Menomonee Falls, Wis., assignor to Artos Engineering Company, New Berlin, Wis.

Filed Dec. 24, 1970, Ser. No. 101,206
Int. Cl. H01r *43/04, 9/00*
U.S. Cl. 29—203 D **13 Claims**

A terminal applicator for attaching an electric terminal to the end of an insulated non-metallic ignition type wire having one or both ends of the wire insulation stripped to expose a short section of the non-metallic conductor. The wire is conveyed in a step by step manner to the terminal applicator. The applicator includes a die set having a movable die and a fixed die. The movable die includes a pusher plate which is

moved downwardly with the movable die to partially bend the exposed conductor at the end of the wire downward into the path of motion of the movable die. The whole terminal applicator is moved toward the wire to seat the end of the wire in the terminal ears of an electric terminal. The motion



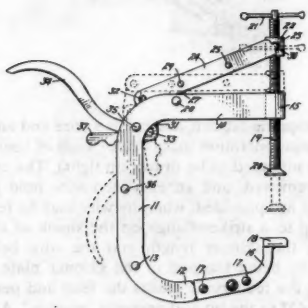
of the applicator is used to bend the downwardly bent conductor back against the outside surface of the insulation so that on crimping of the terminal ears around the insulation, the exposed end of the conductor of the wire will be in electrical contact with the terminal.

3,668,765

AUTOMOTIVE VALVE SPRING COMPRESSING TOOLS

James T. Clark, Ft. Morgan, Colo., assignor to Clark-Feather Manufacturing Co., Fort Morgan, Colo.

Filed Aug. 28, 1970, Ser. No. 67,799
Int. Cl. B25b *5/12*
U.S. Cl. 29—219 5 Claims



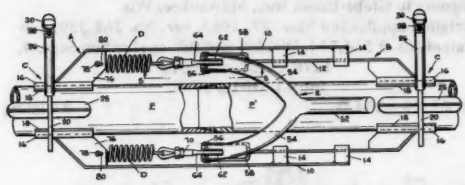
A C-shaped frame having an upper horizontal portion, a vertical side portion, a lower horizontal portion and an open side with an elongated, threaded presetting screw vertically slidable in a vertical screw slide sleeve on the forward extremity of the upper horizontal portion in axial alignment with a valve spring seat mounted on the forward extremity of the lower horizontal portion. A tiltable lever medially mounted on and above the upper horizontal portion and pivotally connected at its forward extremity to an actuating nut threaded on the presetting screw above the screw slide sleeve. A handle member pivoted on the vertical side portion in the plane of the frame and a toggle link connecting the rear extremity of said tiltable lever to the handle member so that vertical movement of the handle member will impart vertical movement to the presetting screw to compress the valve spring between the valve seat and the presetting screw without rotation of the latter.

3,668,766

PIPE COUPLING DEVICE

J. Warne Carter, Wichita Falls, and Martin Duane Neher, Burkburnett, both of Tex., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 27, 1970, Ser. No. 92,996
Int. Cl. B23p *19/04*
U.S. Cl. 29—237 9 Claims



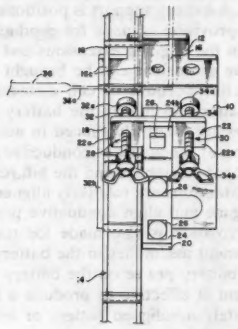
A pipe coupling device is provided which comprises a pair of parallel, telescopically arranged frames. Each frame is provided with means for holding or clamping a pipe section. The frames are connected to one another by tension springs. Manually operable means is employed to place the springs in tension so that the joint provided by the mating ends of pipe sections coated with a cement has constant, resilient pressure applied thereto.

3,668,767

LINK CHAIN DETACHER

Vernon H. Bebo, Academy, S. Dak.

Filed Sept. 22, 1969, Ser. No. 859,889
Int. Cl. B23g *7/04;* B25b *1/00*
U.S. Cl. 29—283 5 Claims



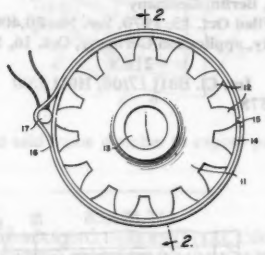
A portable support device for facilitating the detachment of one link of a link chain from another includes a base plate, an abutment plate extending at an angle outwardly of the base plate, and a "bumping" or abutment block located centrally of the base plate. A clamping arrangement mounted on the bumping block clamps a first link in the chain in the area of the intersection between the base and abutment plates. The abutment plate is angled with respect to the base plate so as to permit an adjacent link lying thereagainst to be displaced transversely with respect to the first link and so disconnected therefrom, this displacement being manually effected by impacting forces and the bumping block serving in absorbing these forces.

3,668,768

METHOD OF REBUILDING WORN GEAR TEETH BY EXPLOSIVE SWAGING

Fred De Core; Thaddeus A. Peake, and Ted R. Marshall, all of Louisville, Ky., assignors to The United States of America as represented by the Secretary of the Navy

Filed June 10, 1970, Ser. No. 45,162
Int. Cl. B22d *19/10*; B23p *7/00*
U.S. Cl. 29—401 2 Claims



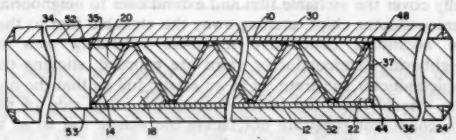
A method of rebuilding worn gear teeth by fitting a metallic driver plate around the top lands of the teeth on a gear and then wrapping a sheet of explosive material around the driver plate. Upon detonation of the explosive material, the driver plate is driven against the gear teeth and the gear teeth are swaged or bulged. The driver plate is then removed and the teeth are then machined or ground to a desired dimension.

3,668,769

ROLL DIFFUSION BONDING METHOD

Charles E. Conn, Jr., Manhattan Beach, and Robert P. Neumann, Torrance, both of Calif., assignors to North American Rockwell Corporation

Original application Dec. 28, 1966, Ser. No. 605,419, now Patent No. 3,444,608, dated May 20, 1969. Divided and this application Jan. 27, 1969, Ser. No. 801,913
Int. Cl. B23p *17/00*
U.S. Cl. 29—421 4 Claims



This disclosure pertains to a method of facilitating removal of magnetically responsive filler elements from an assembled and bonded non-magnetically responsive workpiece by subjecting the workpiece to a magnetic force in an amount sufficient to distort and loosen the filler elements.

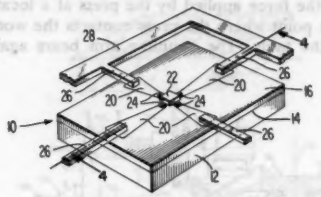
3,668,770

METHOD OF CONNECTING SEMICONDUCTOR DEVICE TO TERMINALS OF PACKAGE

Saleem Ynees Husni, Menham Township, Morris County, N.J., assignor to RCA Corporation

Filed May 25, 1970, Ser. No. 39,989
Int. Cl. B23p *17/00*
U.S. Cl. 29—423 4 Claims

The contacts of a semiconductor device are connected to the terminals of a package for the semiconductor device through metal interconnecting strips. The strips are formed on the surface of a plate from which the strips can be easily pulled away. The semiconductor device is seated on the plate with each contact of the semiconductor device engaging a separate one of the strips and the semiconductor device contacts are bonded to the strips. The terminals, which are connected to a frame, are placed in contact with and bonded to



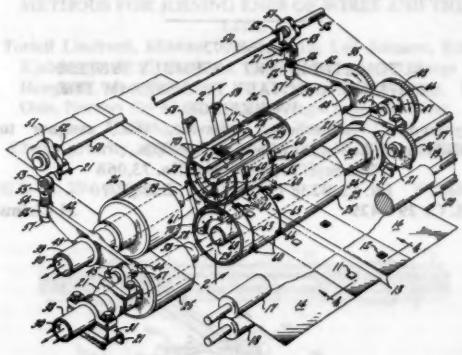
the strips. The assembly of the terminals, interconnecting strips and semiconductor device is then removed from the plate. A package is formed around the assembly with the terminals projecting from the package.

3,668,771

METHOD AND APPARATUS FOR AFFIXING FASTENERS TO A MOVING WEB

Toivo A. Helminen, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed June 12, 1970, Ser. No. 45,862
Int. Cl. B23p *19/00*; B23q *7/10*
U.S. Cl. 29—431 15 Claims



High speed apparatus and method for affixing male or female snap fasteners to a moving web of material are described. The web is advanced continuously, while snap fastener components are periodically positioned in recesses on rotating platens above and below the web. The platens are synchronized with web velocity, and as the snap fastener components rotate and are brought into contact with the web a pressure is applied between the platens to affix the components to each other through the web.

3,668,772

AUTOMATED SYSTEM INCLUDING INDEXING MECHANISM

Frank J. Fink, Chardon, Ohio, assignor to Imperial Manufacturing and Engineering Company, Middlefield, Ohio

Continuation-in-part of application Ser. No. 712,743, Mar. 13, 1968, now abandoned. This application Dec. 22, 1969, Ser. No. 886,970
Int. Cl. B23p *23/00*; B23q *1/10*
U.S. Cl. 29—563 19 Claims

An indexing system including an indexing table and a press unit is disclosed in which a device is provided to prevent sub-

stantial forces from being applied to the table support bearings. In a first embodiment, a coupling arm is connected to a press tool support unit which floats radially relative to the indexing table and is positioned to provide contact between the indexing table and the floating press. The indexing table is provided with a bearing surface normal to the direction of the force applied by the press at a location adjacent to the point where the press contacts the work piece secured to the table. The coupling arm bears against the

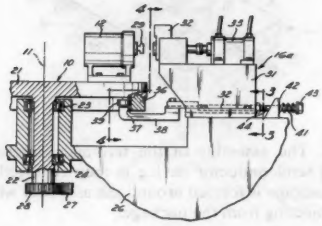


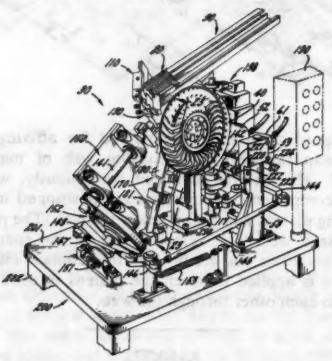
table bearing surface so that the force applied to the outer edge of the indexing table by the press is returned directly to the tool support to minimize the force applied to the table support bearing. In a second embodiment, a pair of jaws are provided on the press tool support unit which are closed behind a mating surface on the work piece to transmit the reaction force directly between the work piece and the press unit and to prevent any of the reaction force from being applied to the table structure.

3,668,773

AUTOMATIC INSERT ASSEMBLY SYSTEM EMPLOYING ROTARY TRANSFER OF THE WORKPIECE

Raymond C. Achterberg, Janesville, Wis., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.

Filed Sept. 17, 1970, Ser. No. 73,068
Int. Cl. B23p *19/00, 15/02;* **B23q** *7/10*
U.S. Cl. 29—429 **31 Claims**



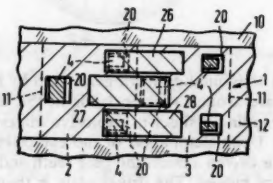
An assembly machine and method are provided for automatically inserting and fixing blade-like inserts in a torque converter turbine drum or like article. The assembly mechanism includes automatic apparatus for accomplishing the requisite assembly motions, including securely grasping a turbine drum or housing at a load-unload station, moving the drum or housing to a work station, stripping a blade-like insert from a feeding magazine, rolling the stripped insert into the drum or housing, angularly indexing the drum or housing to a successive position so as to receive the next blade-like insert, counting the number of angular indexing steps imparted to the drum, and returning the drum or housing with its assembled blade-like inserts to the load-unload station when the requisite number of blades have been inserted.

3,668,774

METHOD OF SEPARATING SEMICONDUCTOR CHIPS FROM A SEMICONDUCTOR SUBSTRATE

Helmut Eger, Olching, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Oct. 13, 1970, Ser. No. 80,400
Claims priority, application Germany, Oct. 16, 1969, P 19 52 216.8
Int. Cl. B01j *17/00;* **H01l** *5/00*
U.S. Cl. 29—578 **9 Claims**



A method of separating semiconductor chips from a semiconductor substrate, the semiconductor chips being arranged within the substrate and including circuit components with electrodes, interconnects or the like conductive members disposed on one side of the substrate, the method including the steps of coating the one side of the substrate with an etchable film that etches without attacking other materials arranged on the semiconductor substrate, forming contact holes through the film to expose the conductive members by photoresist and chemical etching, growing additional conductive members at the exposed first-mentioned conductive members, so that the additional conductive members partially cover the etchable film and extend over to neighboring semiconductor chips, etching away the etchable film so that the additional conductive members extending over to neighboring semiconductor chips are exposed, sticking the semiconductor substrate on to an elastic foil so that the one side thereof faces the latter, scoring the other side of the semiconductor substrate not facing the elastic foil so as to provide scribe lines outlining the semiconductor chips to be separated, breaking and stretching the semiconductor substrates adhering to the elastic foil, so that the semiconductor chips provided with the additional conductive members are separated from each other, and removing the individual semiconductors from the elastic foil.

3,668,775

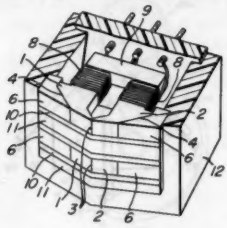
METHOD FOR MANUFACTURING MAGNETIC HEADS

Minoru Morita, Toyonaka; Takashi Shiraki, Neyagawa, and Sadao Masuoka, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Feb. 9, 1970, Ser. No. 9,545
Claims priority, application Japan, Feb. 13, 1969, 44/11273
Int. Cl. G11b *5/42;* **H01f** *7/06*
U.S. Cl. 29—603 **1 Claim**

A method for manufacturing magnetic heads having the tape travel surface partially covered with a non-magnetic material, comprising the steps of mounting a head core with the front side including a gap of a predetermined width substantially identical with a predetermined tape travel surface

in a mating recess of the same contour as the core front formed in a non-magnetic frame member, and grinding said



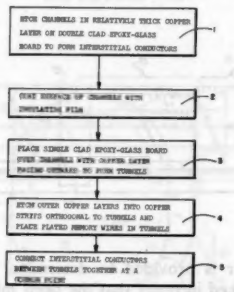
head core and said frame member to expose part of the core front.

3,668,776

METHOD OF MAKING INTERSTITIAL CONDUCTORS BETWEEN PLATED MEMORY WIRES

Joseph M. Shaheen, La Habra, and John Simone, Garden Grove, both of Calif., assignors to North American Rockwell Corporation

Filed June 12, 1970, Ser. No. 45,738
Int. Cl. H01f *7/06*
U.S. Cl. 29—604 **4 Claims**


ETCH CHANNELS IN RELATIVELY THICK COPPER LAYER ON DOUBLE CLAD EPOXY-GLASS BOARD TO FORM INTERSTITIAL CONDUCTORS
1
2
3
ETCH OUTER COPPER LAYERS INTO COPPER STRIPS ORTHOGONAL TO TUNNELS AND PLACE PLATED MEMORY WIRES IN TUNNELS
4
5

Channels are etched in a relatively thick conducting metal layer of a double metal clad dielectric board. The channels are coated with an insulating film. The uncovered dielectric surface of a single metal clad dielectric board is placed over the coated channels to form tunnels for plated memory wires. The exposed conducting layers of the boards are etched into strips orthogonal to the tunnels to form word straps for the plated memory. The conducting metal layers comprising the interstitial conductors between the tunnels are interconnected at a common point.

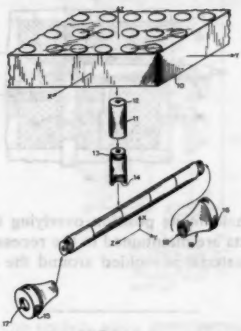
3,668,777

METHOD OF FORMING A LASER TUBE

William H. McMahan, Winter Park, Fla., assignor to Control Laser-Orlando, Inc., Orlando, Fla.

Original application July 24, 1967, Ser. No. 655,652, now Patent No. 3,544,915, dated Dec. 1, 1970. Divided and this application Mar. 9, 1970, Ser. No. 17,770
Int. Cl. H01r *43/00;* **H05k**
U.S. Cl. 29—628 **3 Claims**

A laser construction utilizes a gas which assumes an ionic state at the discharge temperature and in the active discharge region the plasma is contained and "guided" by a tube exhibiting anisotropic and semi-conductor properties, pyrolytic carbon being used as an example. The tube utilizes the thermal and electrical characteristics of the material such that radially of the axis of discharge the tube exhibits high thermal conductivity and axially of the discharge the tube exhibits low thermal conductivity and a semi-conductor electri-



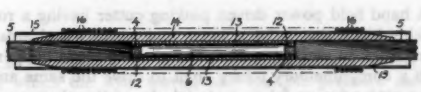
cal character. The tube is held at an anodic potential which enables employment of a unique starting technique and reduction of ionic bombardment between the plasma and the bore of the tube. Other electrical and physical configurations for reducing ion bombardment or "sputtering" are disclosed.

3,668,778

METHODS FOR JOINING ENDS OF WIRES AND THE LIKE

Torleif Lindtveit, Minister Ditlefsvei 15; Leif Johnsen, Betzy Kjelsbergsvei 13, both of Oslo, Norway, and Borge F. Haegland, deceased, late of Christian Michelsensgt. 16, Oslo, Norway (by Marit Haegland, legal representative)

Filed Apr. 3, 1969, Ser. No. 32,321
Claims priority, application Norway, Apr. 5, 1968, 1325/68
Int. Cl. H01r *9/00*
U.S. Cl. 29—630 F **5 Claims**



A method for joining ends of wires and the like by means of an explosive charge. A connecting tube with a bore adapted to receive the ends to be connected is provided with an external layer of explosive charge having a varying geometrical shape longitudinally of said tube so as to produce after detonation alternating parts of different compression so that the contact surface between the tube and the ends therein after compression forms a more or less corrugated profile in the longitudinal direction in order to form an axially locked connection of the assembled components.

3,668,779

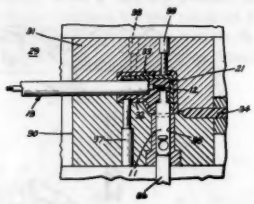
METHOD OF MANUFACTURING DOUBLE INSULATED PLUGS

Prescott K. Turner, Fairfield, Conn., assignor to General Electric Company

Filed Apr. 2, 1969, Ser. No. 812,624
Int. Cl. H02g *15/00*
U.S. Cl. 29—629 **3 Claims**

A method of manufacturing an electrical wiring device in which the electrical connections of the wiring device are positioned within double insulation. The contacts are electrically and mechanically connected to the conductors of a

cord to form connections. A portion of each contact is inserted in a mating recess in a mold and a preformed insert of insulating material is positioned overlying the connections.



The insert is held in its position overlying the connections and the contacts are maintained in the recesses while a body of insulating material is molded around the insert and connections.

3,668,780

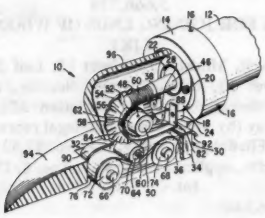
SELF PROPELLED PINKING DEVICE

Roy M. Cowdrey, Lake Hiawatha, N.J., assignor to The Singer Company, New York, N.Y.

Filed Oct. 8, 1970, Ser. No. 79,150

Int. Cl. B26b *25/00*

U.S. Cl. 30—178 **7 Claims**



A hand held power driven pinking cutter having a rotary pinking blade driven by a worm and worm wheel arrangement from an electric motor. The pinking blade cooperates with a complimentary rotary anvil to drive the same and to cut a pink edge on fabric material placed therebetween. An endless belt positioned about two guide rollers on opposite sides of the anvil is driven by frictional contact with the rotary anvil to drive the device forwardly at substantially the same speed at which the cutting action is taking place. The endless belt may have molded projections or spikes extending from the surface thereof and cooperate with complementary depressions in the anvil such that the frictional contact between the belt and the anvil is substantially great. The blade may be imbedded between resilient members to increase the frictional contact between the blade and the anvil.

3,668,781

BASEBALL DIAMOND LAYOUT DEVICE

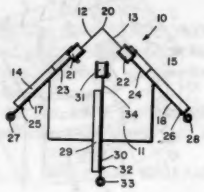
Harold P. Teter, 3929 Lor Ron Avenue, Kent, Ohio

Filed Feb. 24, 1970, Ser. No. 13,533

Int. Cl. A63c *19/06*; G01b *3/10*

U.S. Cl. 33—1 **6 Claims**

A device for laying out the base lines and the locations of the bases and pitcher's mound of a baseball diamond. A flat five-sided plate overlies home plate and has a pair of rails which extend below the first plate and abut against the edges of the home plate on the base lines to the first and third bases. A pair of reels of non-elastic cord are mounted on the flat plate and the cords from these reels drawn along the right and left rails, respectively. The cords have marks to indicate where their ends are a distance of 90 feet from the point of the home plate. A second mark on each cord indicates a distance of 180 feet from the point of the home plate. A third reel is also provided and the cord from this reel extends along the bisector of the angle between the first two



cords. A third rail is provided on the flat plate to indicate when the third cord is being drawn along the proper line. This cord has a mark indicating the distance from the home plate to second base and from hole plate to the pitcher's mound.

3,668,782

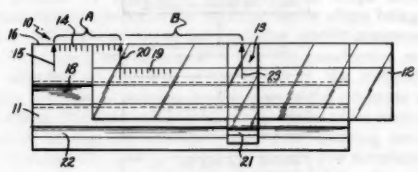
SLIDE RULER TO ADJUST LENGTH OF TYPEWRITTEN LINE

Herbert Hanft, 1412 Ivanhoe Street, Alexandria, Va.

Filed Oct. 20, 1970, Ser. No. 82,424

Int. Cl. G06g *1/02*

U.S. Cl. 33—174 R **4 Claims**



A slide ruler is provided to determine how draft copy should be marked in order that the draft might be recopied with spaces added or taken away as needed in order that each line in the final copy will end at a predetermined point to provide an even right hand border. In the ruler, the slide base carries a first scale with fixed left hand index and the slide carries a second set back scale with a fixed left hand index, and a movable right hand index is provided so that a part of the final copy line can be measured between the fixed indices and the remainder of the final copy line can be measured between the fixed index on the slide and the movable index.

3,668,783

SPLINE WEAR GAUGE

Vernon A. Riddell, Mt. Clemens, Mich., assignor to Thiokol Chemical Corporation, Bristol, Pa.

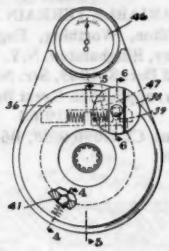
Filed Mar. 5, 1970, Ser. No. 16,668

Int. Cl. G01m *13/02*

U.S. Cl. 33—179.5 R **7 Claims**

The spline wear gauge disclosed herein comprises several forms which may be utilized for gauging external or internal splines. Each form comprises two gauge members having circumferentially spaced spline teeth, the teeth on one of the members having an addendum longer than the teeth on the other of the members. The members are rotatable relative to one another so that when they are brought into position adjacent the spline being gauged and rotated relative to one another, one of the members contacts the spline teeth of the

spline being gauged at a different position when the other of the members. Any wear on the teeth will be evident by a relative rotational movement that is shown visually by a dial indicator on the gauge body.

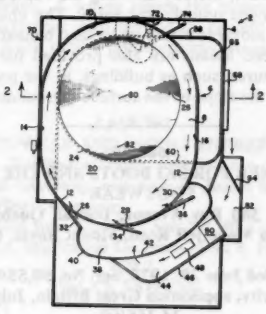


3,668,784

METHOD AND APPARATUS FOR DRYING LAUNDRY

Walter Dorwin Teague, Jr., Nyack, N.Y.; Anthony Philip Montalbano, Fresh Meadow, N.J.; Andrew A. Oakes, East Rutherford, N.J.; Keith Osborne, Ridgefield, N.J., and Peter E. Susey, Columbus, Ohio, assignors to Columbia Gas System Service Corporation, New York, N.Y.

Filed May 19, 1970, Ser. No. 38,722
Int. Cl. F26b *3/10*
U.S. Cl. 34—10 21 Claims



A laundry drying method and apparatus wherein a continuous flow of warm relatively dry air is forced tangentially into the curved lower portion of a stationary drying chamber adapted to contain wet laundry to form an air flow following the contours of the chamber and which separates and carries the laundry along the flow path for full exposure to the warm air and rapid drying of the laundry.

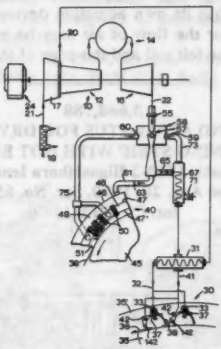
3,668,785

INTEGRATED DRYING PROCESSES AND APPARATUS

Stephen Anthony Rodwin, Montreal, Quebec, Canada, assignor to Dominion Engineering Works, Limited, Lachine, Quebec, Canada

Filed June 19, 1970, Ser. No. 47,643
Claims priority, application Canada, Aug. 18, 1969, 59,712
Int. Cl. F26b *5/14*
U.S. Cl. 34—14 6 Claims

Paper or other webs are dried in a composite drying cycle having pre-heated air compressed in a gas turbine to provide compressed air as a mechanical input to whistles of a dryer section, with thermal input to a succeeding dryer section provided directly or by heat exchange from the turbine exhaust gases, at least one section using impingement air in drying relation to remove moisture from the web.

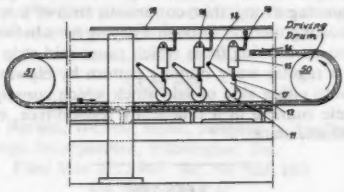


3,668,786

FACILITY FOR HEATING A PRODUCT IN STRIP

Jean Jacques Barny, Lyon, France, assignor to Societe D'Etudes et de vante de Materiels Pour la Fabrication et le Faconnage du Carton Ondule-Martin, Rhone, France

Filed May 8, 1969, Ser. No. 823,123
Claims priority, application France, May 10, 1968, 151405
Int. Cl. F26b *13/10*
U.S. Cl. 34—43 6 Claims



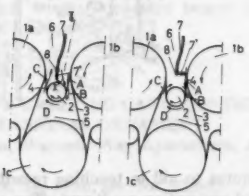
A heating facility for strip product including a heating bed over which the strip travels and variable pressure devices which urge the strip toward the bed.

3,668,787

VENTILATING DEVICE FOR A MULTICYLINDER DRIER

Nils-Christian Berg, Turuku, and Mauri Aatos Soininen, Naantali, both of Finland, assignors to Valmet Oy, Helsinki, Finland

Filed Sept. 1, 1970, Ser. No. 68,684
Int. Cl. F26b *11/02*
U.S. Cl. 34—111 6 Claims



A device is used for ventilating a pocket of a multicylinder drier. The pocket consists of a felt guided by a felt roll. A

partition extends transversely to the felt and is located opposite the felt roll belonging to the pocket. The invention is particularly characterized in that the marginal part of the partition pointing toward the felt roll consists of sections each of which has its own adjusting device so that a gap of desired width for the flow of air may be produced between the surface of the felt roll and the edge of the section.

3,668,788

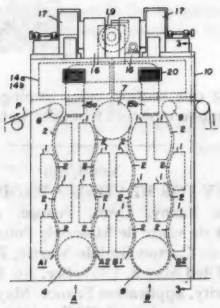
METHOD AND APPARATUS FOR DRYING WAVILY RUNNING STRIP WITH HOT BLASTS

Tadashi Kobayashi, 1560-2 Higashihara Ienma, Fuji, Japan

Filed Aug. 20, 1970, Ser. No. 65,539

Int. Cl. F26b *13/00*

U.S. Cl. 34—156 **2 Claims**



An arrangement for drying a strip of stock comprising the steps of running a long, thin, continuous strip of stock having a liquid coating thereon through a drying zone between overlaping convex blowing faces which cause said strip to travel along in a regular wavy running pattern by blowing film of hot air onto either side of said stock which consequently is dried while running in a practically tension-free, extensible and shrinkable state.

3,668,789

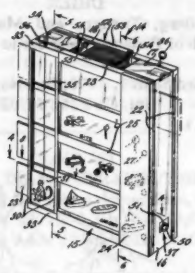
TEACHING AID FOR RETARDED CHILDREN

Jean Ferguson, 721 South Green Street, Apt. 223, Longview, Tex.

Filed Dec. 4, 1970, Ser. No. 95,281

Int. Cl. G09b *3/02*

U.S. Cl. 35—9 E **5 Claims**



An apparatus to aid in teaching retarded children which utilizes word association cards and offers rewards for correct answers. The proper identification of a word or a picture by a student results in the student's receipt of a token which will be exchanged for a reward. The student is further rewarded by being allowed to move an indicator to a position adjacent a different word association card after each correct answer.

3,668,790

VARIABLE TERRAIN MODEL

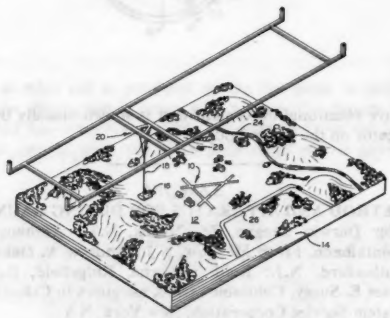
Raymond C. Wilton, Worthing, England, assignor to The Singer Company, Binghamton, N.Y.

Filed Dec. 8, 1969, Ser. No. 883,009

Claims priority, application Great Britain, Dec. 12, 1968, 59,219/68

Int. Cl. G09b *9/08*; B64g *7/00*

U.S. Cl. 35—12 N **2 Claims**



A terrain model suitable for use with a viewing device to simulate terrain features of the real world with means for varying in a controlled manner the elevation of various portions of the model, thereby allowing the contour of the terrain to be changed quickly and easily. The changes are accomplished by movable actuators located beneath a deformable, elastic sheet. Means are also provided for maintaining permanent features, such as buildings, in the proper vertical relationship as the slope of the surface thereunder is varied.

3,668,791

FASTENER FOR SKI BOOTS AND THE LIKE FOOTWEAR

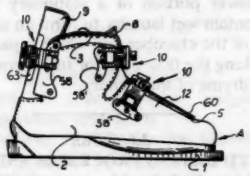
Otto Salzman, 380 Roy Avenue, Dorval, Quebec, and Paul Salzman, 976 Moncrieff Road, Mount Royal, Quebec, both of Canada

Filed June 29, 1970, Ser. No. 50,559

Claims priority, application Great Britain, July 8, 1969, 34,356/69

Int. Cl. A43b *23/00*

U.S. Cl. 36—50 **12 Claims**



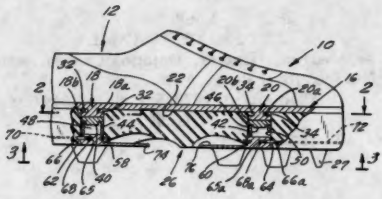
A fastener device for securing the flaps of ski boots while adjustably varying the tightness of the boot for maximum skiing efficiency, comprising a longitudinally extensible and contractable strip assembly, hinged at one end to one flap of the boot and having its other end adapted to be hooked to the other flap of the boot, manually rotatable means for extending and contracting the strip assembly and means to releasably retain the strip assembly against extension.

3,668,792

BREAKAWAY ATHLETIC SAFETY SHOE

William A. York, 41-56 Denman Street, Elmhurst, N.Y.

Filed Jan. 8, 1971, Ser. No. 104,994
Int. Cl. A43b *23/28*
U.S. Cl. 36—59 R 12 Claims



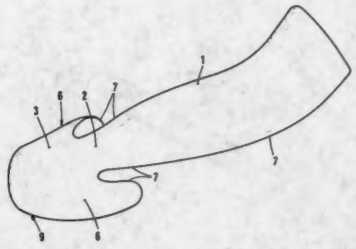
The athletic safety shoe has an upper sole mounted on the body of the shoe and a lower breakaway safety sole having traction means on the underside thereof and releasibly attached to the upper sole by a breakaway safety mechanism. The upper sole has a downwardly extending rib with an enlarged head portion attached to the upper sole by a relatively narrow neck portion. The safety sole has a generally transversely extending grooved track configured to slideably receive the rib. The track prevents longitudinal movement of the soles relative to each other when the rib is disposed in place in the track. The safety sole has a retaining part engaged with the rib adjacent the neck portion to prevent upward movement of the rib out of the track. A pressure piece is engaged with the rib and mounted on the safety sole under the grooved track. A spring biases the pressure piece into frictional engagement with the rib to prevent the rib from sliding in the track until a predetermined transverse force is applied.

3,668,793

FOOTWEAR AND INSERT THEREFOR

Rudolf Stohr, Tuttlingen/Wurtt, and Werner Stelzer, Rottweil, both of Germany, assignors to Justus Rieker & Co., Tuttlingen/Wurtt, Germany

Filed June 22, 1970, Ser. No. 48,372
Claims priority, application Germany, Feb. 8, 1969, P 19 34 490.2
Int. Cl. A61f *5/00*
U.S. Cl. 36—71 9 Claims



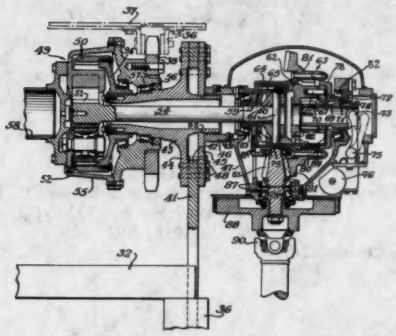
An insert member for fitting within footwear, having a toe cap portion, a flexible connecting portion and a tongue portion supported in an elevated position with respect to the sole of the footwear. The insert member is a synthetic plastics material molding, and can have a cover of leather.

3,668,794

CHANGE-SPEED REDUCTION DRIVE FOR A CONVEYOR

Julius F. Marquardt, Westchester, and Ronald A. Wade, Chicago, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Nov. 13, 1969, Ser. No. 876,507
Int. Cl. B60p *1/36;* E02f *3/16;* B65g *19/00*
U.S. Cl. 37—8 1 Claim



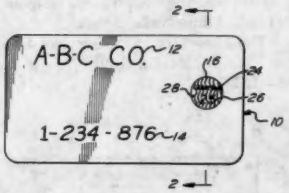
Mechanical change-speed reduction drive for a conveyor or elevator associated with a bowl for scooping up earth. The drive comprises a hydraulic motor, a pinion coupled thereto, a flywheel in the coupling, a crown gear meshing with the pinion, a planetary change-speed unit fixed to the crown gear, and a planetary reducer connecting the change-speed unit with driving sprockets for the conveyor.

3,668,795

IDENTIFICATION MEANS

Ronald C. Barker, Weston, Mass., assignor to Applied Laser Technology, Incorporated, Wilmington, Del.

Filed May 27, 1969, Ser. No. 828,183
Int. Cl. G09f *3/02*
U.S. Cl. 40—2.2 4 Claims



Identification means having concealed bearer identifying indicia in the form of a hologram.

3,668,796

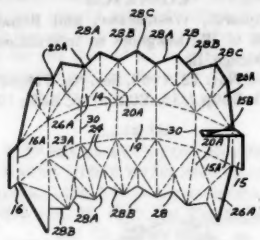
COMBINATION GREETING CARD AND THREE DIMENSIONAL ORNAMENT

Michael P. Patterson, Wayzata Way Apartments, Apt. 101, Wayzata, Minn.

Filed Dec. 14, 1970, Ser. No. 97,665
Int. Cl. G09f *19/00*
U.S. Cl. 40—126 A 8 Claims

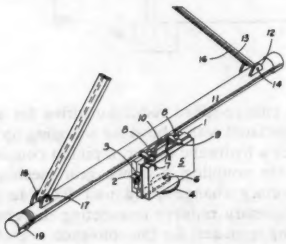
The present invention relates to a greeting card that folds flat for mailing, and can be folded into a three dimensional

ornament or point of purchase display for decorative purposes, if desired, by having the card formed into prescored



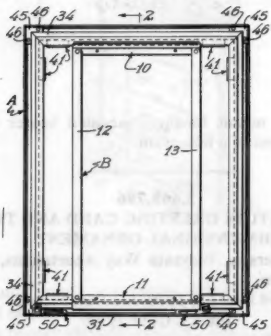
panels. After the card has been received it can be easily folded and assembled into its ornamental form.

3,668,797
ILLUMINATED SIGN
Rowland H. Gray, 303 Sparks Avenue, Jeffersonville, Ind.
Filed June 13, 1969, Ser. No. 833,096
Int. Cl. G09f *13/02*
U.S. Cl. 40—130 **5 Claims**



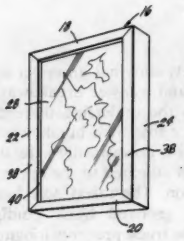
A device for storing, displaying, and illuminating selected message-carrying signs having a bracket adapted to receive a battery where a tubular receptacle for storing such signs is secured to the bracket and carries means for displaying the signs. A light removably connected to the bracket is provided to illuminate the signs in place in the display means.

3,668,798
MIRROR FRAME
Donald N. Mehl, Minneapolis, Minn., assignor to Designward Industries Inc., Minneapolis, Minn.
Filed May 26, 1970, Ser. No. 40,629
Int. Cl. G09f *1/12*
U.S. Cl. 40—152.1 **11 Claims**



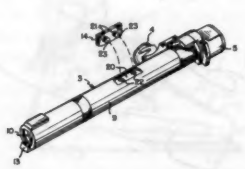
A mirror frame includes a mounting member and a supporting frame. The supporting frame comprises a pair of channel-shaped members connected by links. The mounting member encloses the mirror and includes downwardly extending flanges engageable in said channel-shaped members. The mounting member is wider than the supporting frame. A pair of resilient members are slideable on a horizontal ledge in the lower end of said mounting member and engage between said ledge and said frame member to hold the parts assembled.

3,668,799
ART FRAME ASSEMBLY
Paul A. Sharron, Windsor, Ontario, Canada, assignor to Profab, Inc., River Rouge, Mich.
Filed Aug. 3, 1970, Ser. No. 60,519
Int. Cl. G09f *1/12*
U.S. Cl. 40—152.1 **22 Claims**



An art frame assembly made of four aluminum extrusions having identical transverse cross sections where the art object is retained in the frame by extruded plastic retainer clips of a particular construction. In the fully assembled frame, the clips are stressed with one end of the clip releasably locked in a cooperating portion of the frame and the other end of the clip engaging the art object. Extruded plastic spacer strips can be mounted on the frame to provide a shadow box effect where desired. Modified retainer clips are used to mount objects of different thicknesses and depending on whether the shadow box spacer is used.

3,668,800
RIFLE BOLT WITH A REMOVABLY SECURED STABILIZING LUG THEREON
Harry H. Sefried, II, New Haven, Conn., assignor to Sturm, Ruger & Co., Inc., Southport, Conn.
Filed Aug. 24, 1970, Ser. No. 66,482
Int. Cl. F41c *11/00*
U.S. Cl. 42—16 **8 Claims**



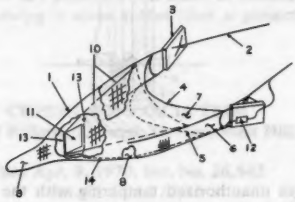
A cylindrical breech bolt for a bolt action rifle, the bolt having a lug-receiving recess formed in the exterior cylindrical surface thereof that is adapted to receive a separate stabilizing lug member. The separate stabilizing lug member is removably secured to the bolt by inwardly extending projections integrally formed on the inner surface of the lug member, the inwardly extending projections being received in holes formed in the annular wall of the bolt.

3,668,801

DEVICE FOR SEPARATING SHRIMP FROM OTHER SEA ANIMALS

Charles B. Metcalf, Jr., 3601 Swan Lane, Pensacola, Fla.

Filed July 6, 1970, Ser. No. 52,626
Int. Cl. A01k *73/02*
U.S. Cl. 43—17.1 **3 Claims**



A system generally employing a net and an electrical pulse generator that is used for separating shrimp from trash fish, undesirable sea animals and miscellaneous objects. The catch is subjected to an electrical field within the separator which effects only the shrimp. The unwanted portion of the catch not effected by the electrical field passes through the separator and back into the water as it is. No electronarcosis or electrolaxis is produced nor is any of the fish or other undesirables effected in any manner other than possible mechanical diversion, associated with the physical characteristics of the various types and sizes of separators.

3,668,802

COMPACT TACKLE AND UTILITY BOX

Harold Benward, 501 North Eaton Street, Albion, Mich.

Filed Nov. 30, 1970, Ser. No. 93,797
Int. Cl. A01k *97/06*
U.S. Cl. 43—57.5 **1 Claim**

A container box and a holder for receiving the box, the holder having a clip so to be conveniently supported from a belt which is worn by a person such as a fisherman, the box being used for containing tackle which is thus located in a convenient and handy location for quick and easy reach thereto.

3,668,803

BALL ROLLING TOY

George J. Miller, 2441 Arthur Street, Hollywood, Fla.

Filed Feb. 11, 1971, Ser. No. 114,576
Int. Cl. A63h *33/00*
U.S. Cl. 46—1 R **4 Claims**

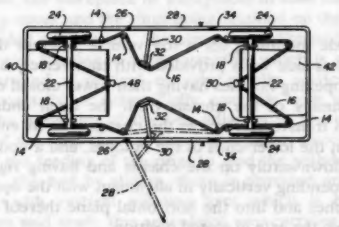
A ball rolling toy including a ball and an oblong device that includes two side rails, an intermediate anti-wedge rail, two handles and two hubs connecting the device together. The side rails are positioned in parallel relation to one another and connected together by connecting means or hubs. Each side rail has a side track positioned about its outer inside edge that is a mirror image of the other side track. The distance between each side track is nearly equal to the diameter of the ball. The anti-wedge rail is connected to the hubs. The anti-wedge rail has an anti-wedge track having an outline that is shaped similar to but of a smaller scale than the outline of each side track. The distance between the anti-wedge track and each side track is equal to the radius of the ball times the square root of two. The centerline of each rotatable handle is offset from the centerline of the other handle. Each handle projects outwardly from opposite sides of the device.

3,668,804

ELASTIC BAND LOADED TOY

Emanuel A. Winston, 2925 West Touhy Avenue, Chicago, Ill.

Filed Jan. 27, 1970, Ser. No. 6,118
Int. Cl. A63h *33/06*
U.S. Cl. 46—17 **6 Claims**



A toy structure having an elastic band spanned in the interior of its body to power the opening of its elements, or to project elements, upon actuation or impact.

3,668,805

FLAT DOLL

Patricia A. Coleman, 820 West Avenue A, Elk City, Okla.

Filed June 19, 1970, Ser. No. 47,252
Int. Cl. A63h *3/00*
U.S. Cl. 46—151 **2 Claims**

A doll with a flat side supported by projections extending from the feet of the doll into a base and felt clothes cor-

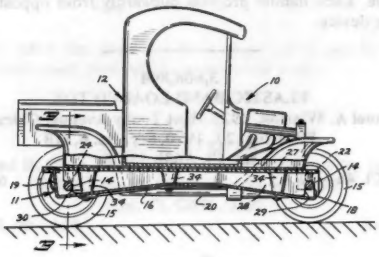
responding to the doll's figure to be worn by the doll and secured thereto by means of tab portions extending behind the neck of the doll and snapping together.

3,668,806

AXLE MOUNTING FOR TOY VEHICLES

Ronald R. Pauly, Mound, Minn., assignor to Tonka Corporation, Mound, Minn.

Filed Apr. 5, 1971, Ser. No. 130,896
Int. Cl. A63h 17/26
U.S. Cl. 46—201 **3 Claims**



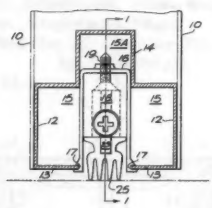
An axle mounting for a toy vehicle wherein the vehicle chassis has side walls provided with transversely aligned upwardly opening notches having their lower closed ends offset longitudinally of the chassis from the open ends, an axle disposed transversely across the chassis with its end portions seated in the lower ends of the notches, and a body member seated downwardly on the chassis and having rigid projections depending vertically in alignment with the open ends of the notches and into the horizontal plane thereof to engage and retain the axle in seated position.

3,668,807

MOUNTING DEVICE FOR WEATHER SEALING INSERTS IN DOORS

Edwin R. Thompson, Canfield, Ohio, assignor to Thompson-Canfield Inc., Canfield, Ohio

Filed Aug. 5, 1970, Ser. No. 61,096
Int. Cl. E06b 7/16
U.S. Cl. 49—482 **5 Claims**



A mounting device for snap in registry in the bottom edge of a hollow metal door provides a channel in which a weather sealing insert is mounted in vertically adjustable relation thereto so as to be operable therein.

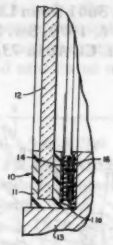
3,668,808

WINDOW GLASS RETENTION SYSTEM

Joseph Perina, Huntington, N.Y., assignor to American Velcro, Inc.

Filed May 12, 1971, Ser. No. 142,575
Int. Cl. E05c 21/02
U.S. Cl. 49—465 **3 Claims**

A retention system for window frames incorporating hook and loop fastener elements and novel sealing means which



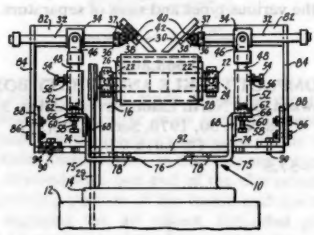
discourages unauthorized tampering with the retaining elements.

3,668,809

BEVELING ATTACHMENT FOR BELT SANDERS

James A. Coon, 929 Drever Street, West Sacramento, Calif.

Filed Sept. 4, 1970, Ser. No. 69,787
Int. Cl. B24b 21/04, 21/16, 41/06
U.S. Cl. 51—135 R **15 Claims**



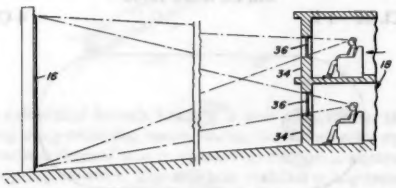
Upwardly diverging elongated boards or guide plates are arranged above the upper run of a sanding belt and either is adapted to support a board or other element to be beveled on the sander, the plates being adjustable individually toward and away from each other to determine the depth of the beveling operation and being bodily movable to take advantage of the sanding surface on the belt at any point across the width thereof.

3,668,810

THEATER WITH SEPARATE VIEWING BOOTHS

Earl F. Bankston, Jackson, Tenn., assignor to Cabana Theatres, Inc., Jackson, Tenn.

Continuation-in-part of application Ser. No. 796,952, Feb. 6, 1969, now Patent No. 3,545,143. This application July 17, 1970, Ser. No. 55,661
Int. Cl. E04h 3/30
U.S. Cl. 52—6 **7 Claims**



Theater construction with a series of separate viewing booths arranged in one or more rows with the rows curving

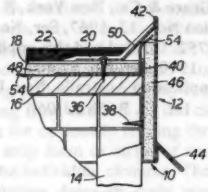
about the screen area and the individual booths being directed toward the screen for a clear viewing thereof by the occupants. Each booth is provided with an observation window which, in size, so relates to the screen as to approximately mask at least three edges of the screen and present an impression of viewing a scene occurring immediately occuring outside the window. The areas around both the screen and the window are painted a flat black to enhance the impression of viewing a scene rather than a projection on a screen.

3,668,811

COPING AND FASCIA TRIM

Kenneth Lloyd Pollard, 73 Satok Terrace, West Hill, Ontario, Canada

Filed Apr. 9, 1970, Ser. No. 26,842
Int. Cl. E04d *13/15*
U.S. Cl. 52—94 **12 Claims**



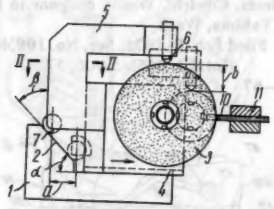
Coping and fascia trim for the edge of a building structure is comprised of a pair of elongated interconnectable trim strips each having a continuous anchor flange securable to the roof and a skirt depending to overlie the building facade. The strips are interconnected by a tongue and stirrup at the skirt edges and are dimensioned to provide spacing between the anchor flanges for a roofing layer. Optionally the trim may accommodate fascia insulating board between the skirts and roof insulation board between the anchor flanges.

3,668,812

CUTTER-GRINDING MACHINES

Vladimir Viktorovich Idel, ulitsa Graftio 15, Kv. 6, Zavolzhie, Gorkovskoi oblasti, U.S.S.R.

Filed Mar. 12, 1970, Ser. No. 18,958
Claims priority, application U.S.S.R., Apr. 1, 1969, 1316567
Int. Cl. B24b *49/00*
U.S. Cl. 51—165.87 **1 Claim**



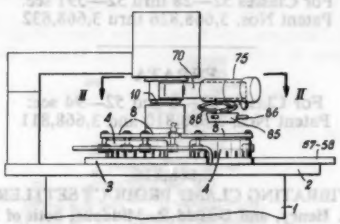
A device for dressing abrasive wheels, whose essence resides in making the working zone free with a view to utilizing large diameter abrasive wheels and working large-sized articles, characterized by the provision of vertical guide members in a member that carries an abrasive wheel, whereby the holder of a dressing tool, which travels along a guide member inclined at an angle of 45° to the horizon, moves the abrasive wheel towards the article being worked.

3,668,813

LAPPING MACHINE

Jacques Barragan, Sceaux, France, assignor to R. A. Stokvis & Fils, Paris, France

Continuation of application Ser. No. 781,212, Dec. 4, 1968, now abandoned. This application Mar. 23, 1971, Ser. No. 127,397
Int. Cl. B24b *5/34, 7/04, 10/10*
U.S. Cl. 51—128 **7 Claims**



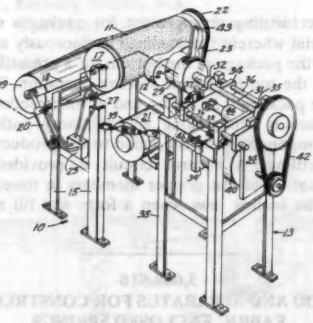
In a surface lapping machine in which workpieces to be lapped are confined in rings placed on the rotatable bed of the machine, the workpiece or workpieces in each ring being loaded by a cover and the rings being retained on the bed by arms provided with rollers, the arms being disposed in star formation and forming a rotary assembly which is movable stepwise around a vertical or substantially vertical shaft disposed coaxially or substantially coaxially with the bed, while at the periphery of the bed adjacent to the stopping positions of the rings there is disposed a plane, smooth table permitting the feeding of the rings to, and the withdrawal of rings from, the bed by sliding, there is provided an articulated arm with vertical pivoting axes which is pivotally mounted on said shaft, this articulated arm carrying a vertically guided raising means engageable with said cover.

3,668,814

SURFACE GRINDING DEVICE

Conrad T. Freerks, St. Paul, and Fred R. Luecke, Jr., White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 30, 1970, Ser. No. 23,749
Int. Cl. B24b *1/00, 21/04*
U.S. Cl. 51—144 **13 Claims**



A method of and an apparatus for grinding a planar surface on a workpiece when the workpiece is pressed against an abrasive belt moving in an arcuate path. The workpiece is held by the apparatus with the plane at which the planar surface is to be formed oriented generally parallel to the axis of the arcuate path of the abrasive belt, and is moved about an axis normal to and intersecting the axis of the arcuate path

while it is pressed into high pressure grinding contact with the abrasive belt to move the workpiece toward the abrasive belt in a direction normal to the axis of the path of the abrasive belt. When the plane at which the planar surface to be formed is tangent to the abrasive belt, the movement of the workpiece toward the belt is halted so that the desired planar surface is formed on the workpiece.

ERRATA

For Classes 52—28 thru 52—591 see:
Patent Nos. 3,668,826 thru 3,668,832

ERRATA

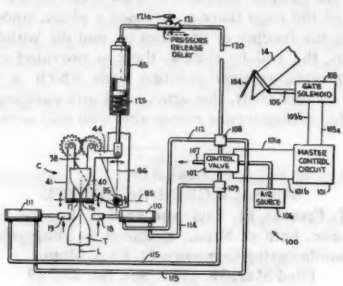
For Classes 52—6 and 52—94 see:
Patent Nos. 3,668,810 and 3,668,811

3,668,815

VIBRATING CLAMP PRODUCT SETTLER

Nelson R. Henry, and Donald R. Middour, both of Decatur, Ga., assignors to The Woodman Company, Inc., Decatur, Ga.

Continuation-in-part of application Ser. No. 714,862, Mar. 21, 1968. This application Mar. 12, 1970, Ser. No. 18,934
Int. Cl. B65b *1/22*
U.S. Cl. 53—24 **26 Claims**



A product settling arrangement for packages of flexible sheet material wherein the package is vigorously agitated by gripping of the package at the bottom for a presettling operation and at the top for a final settling operation. The movement of the package is in the up and down direction with the preferred action being along an oscillatory path whereby multiple component force is applied to the product for more efficient settling. A control circuit is provided insuring proper actuation of the gripper members in timed relationship with the sealing jaws when a form and fill machine is utilized.

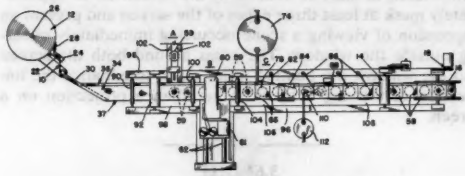
3,668,816

METHOD AND APPARATUS FOR CONSTRUCTING FABRIC ENCLOSED SPRINGS

Lloyd W. Thompson, deceased, late of High Point, N.C. (by Mildred B. Thompson, administratrix), assignor to Cone Mills Corporation, Greensboro, N.C.

Filed July 10, 1970, Ser. No. 53,785
Int. Cl. B65b *63/02*
U.S. Cl. 53—28 **10 Claims**

Web material is folded to form two overlying plies integrally connected along one longitudinal edge for receiving compressed coil springs therebetween. The springs are enclosed within individual pockets formed by sewing the plies



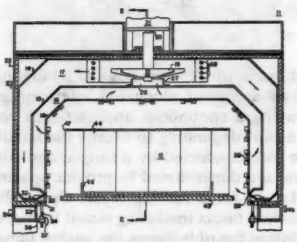
transversely between adjacent springs and by adhering longitudinally the plies along one edge portion.

3,668,817

SHRINK TUNNEL AND METHOD OF SHRINKING FILM ON ARTICLES

Sydney George Frederick Bell, Altona, Victoria, Australia, assignor to W. R. Grace & Co., New York, N.Y.

Original application Nov. 13, 1967, Ser. No. 682,306, now Patent No. 3,526,752. Divided and this application May 27, 1970, Ser. No. 51,407
Claims priority, application Australia, Nov. 18, 1966, 14135
Int. Cl. B65b *53/06*
U.S. Cl. 53—30 **3 Claims**



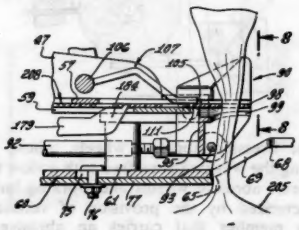
This invention is directed to shrink tunnel including an inverted U-shaped housing having a hot air inlet on each side near the bottom thereof and an air outlet below the top of the packages passing through the housing with the inlets and outlets positioned to impinge air against the ends of a package passing through the tunnel and withdraw a large part of the air from the tunnel before it can rise above the top of the package; all as further described herein.

3,668,818

SEMI-AUTOMATIC CLOSURE APPLICATOR

Jack H. Holmes, Cowichi, Wash., assignor to Kwik Lok Corporation, Yakima, Wash.

Filed Feb. 8, 1971, Ser. No. 108,401
Int. Cl. B65b *51/00, 57/02*
U.S. Cl. 53—67 **14 Claims**



A power-cycled machine triggered by the manual vertical presentation thereto of a bunched bag neck, to apply in con-

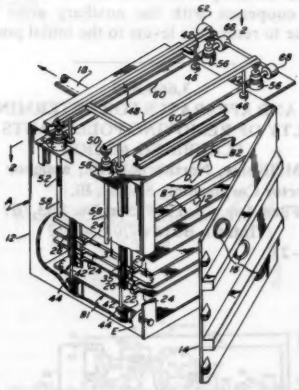
fining relation to said neck a "Kwik Lok" type of bag closure. The machine receives closures in strip form, each closure having a narrow forward opening connecting with a heart-shaped closure aperture forming jaws preventing escape of the bag neck forced through said opening into said aperture. This strip is advanced during the second half of each cycle to feed the foremost closure into a slot in a closure applying rocker with the latter rocked upwardly into horizontal position. As the cycle is concluded, the rocker is rocked 60° downward to thus incline downward the foremost closure. The next cycle is initiated by presenting a vertically bunched bag neck manually to the middle of the rocker, the bag neck engaging a trigger starting the motor which rocks the rocker to swing the foremost closure back up to horizontal position, thus flexing the jaws thereof about the bunched bag neck and trapping the latter in the closure aperture. The motor automatically stops when this occurs, and starts again to complete the cycle when the closed bag is pulled forwardly to separate the foremost closure from the strip. The next following closure then becomes the foremost in the strip and is automatically fed into the rocker and swung downwardly 60° in readiness to be applied to a bag in the next following cycle. An automatic indexer prevents escape rearwardly of the foremost closure while being applied to a bag neck. The indexer also secures the balance of the closure strip against being pulled forwardly by the separation of the closure on the bag from the rest of the closure strip. Provision is also made for optionally feeding through the machine bare closures in strip form or strips of such closures having labels glued on the individual closures. The machine also has a printer for printing dates or code markings on the individual closures or labels as they pass through the machine.

3,668,819

VACUUM DRYING AND STOPPERING APPARATUS

Charles Edward Henshaw, Delran, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Feb. 8, 1971, Ser. No. 113,182
Int. Cl. B65b *31/02*
U.S. Cl. 53—102 **3 Claims**



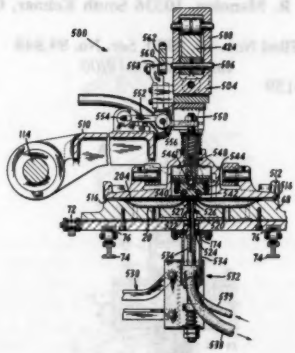
Vacuum drying and stoppering chamber with elevator shelves for sealing and capping bottles, the shelf spacing being infinitely adjustable to accommodate bottles of various sizes with maximum efficiency.

3,668,820

PACKAGING MACHINE

Allan I. Parvin, Millburn, and Douglas P. Roome, Cedar Grove, both of N.J., assignors to Standard Packaging Corporation, New York, N.Y.

Original application Mar. 11, 1968, Ser. No. 712,209, now Patent No. 3,540,186. Divided and this application July 9, 1970, Ser. No. 53,434
Int. Cl. B65b *31/04*
U.S. Cl. 53—112 R **10 Claims**



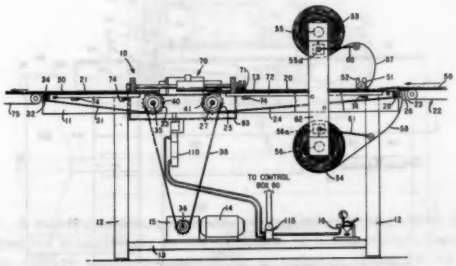
A packaging machine for applying cover sheets to substantially rigid, product-containing trays and evacuating and sealing the covered trays. The product-containing trays are moved in succession along a conveyor at a substantially uniform speed, and a cover web is tack-sealed to the leading edge of each tray. As each tray moves along a conveyor, it draws the cover web over it, the web is severed at the trailing edge, and an initial seal is then formed between the cover sheet and tray. Next, the tray is evacuated through openings left in the initial seal between the cover sheet and the tray and final seals to close the evacuation openings are made.

3,668,821

CUTTING AND WRAPPING MACHINE

Ernest J. Benson, Berkeley Heights, N.J., and Charles G. Fischer, Norwalk, Conn., assignors to Benson Equipment Co., Inc., Berkeley Heights, N.J.

Filed June 2, 1970, Ser. No. 42,611
Int. Cl. B65b *63/00*
U.S. Cl. 53—123 **6 Claims**



This invention relates to an apparatus for wrapping shingled meat products with paper and then cutting the wrapped

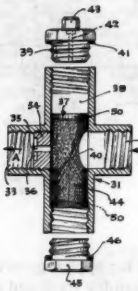
product in predetermined lengths. The shingled meat product is fed between two layers of wrapping paper and is then fed through a cutting mechanism which periodically moves at the speed of the fed paper and meat. A reciprocating blade on the cutting mechanism slices through the paper and meat at predetermined intervals leaving an individually wrapped portion ready to be stored or transported.

3,668,822

FLOW RESISTANCE EQUALIZER FOR LIQUID CIRCULATION SYSTEM

Gerald F. Mannion, 608 Bowlingreen Court, Naperville, Ill., and James R. Mannion, 10336 South Kolmar, Oak Lawn, Ill.

Filed Nov. 16, 1970, Ser. No. 89,848
Int. Cl. B01d *19/00*
U.S. Cl. 55—159 **7 Claims**



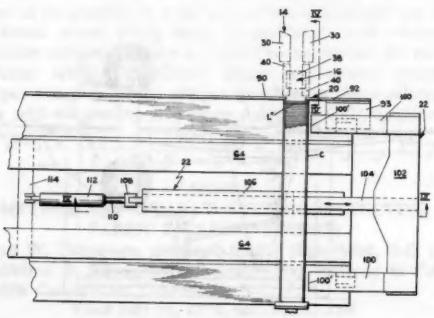
A flow equalization fitting for balancing a water circulation system by equalizing the flow resistances of a number of water utilization devices in the system, comprising a replaceable orifice member mounted in the outlet of the fitting, a strainer and trap located in the fitting ahead of the orifice, with a clean-out for the trap, and a vented air chamber for trapping entrained air released ahead of the orifice.

3,668,823

FORWARD HORIZONTAL PACKER

Melvin E. Larson, Grand Rapids, Mich., assignor to Rospatch Corporation, Grand Rapids, Mich.

Filed Sept. 8, 1970, Ser. No. 70,126
Int. Cl. B65b *5/10;* **B65g** *57/00*
U.S. Cl. 53—250 **3 Claims**



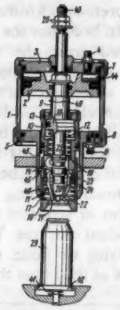
This specification discloses the packing of small planar or sheet-like items, particularly clothing labels, into containers, including an item support that shifts the items arcuately and then through a restricted opening into packed array in a container, and container advancing means that also operates a gate to close the opening during container advancement.

3,668,824

DEVICE FOR SECURING A VALVE IN THE NECK OF AN AEROSOL VESSEL

Nikolai Nikolaevich Solomonov, ulitsa Blaumana, 16/18, kv. 16; Vladimir Pavlovich Ishanin, ulitsa Blaumana, 8, kv. 6, and Talvalds-Olavs Arnoldovich Apsalons, ulitsa Dikju, LL, kv. 2, all of Riga, U.S.S.R.

Filed Nov. 24, 1970, Ser. No. 92,404
Int. Cl. B65b *7/28*
U.S. Cl. 53—330 **1 Claim**



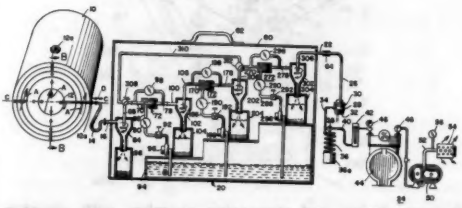
A device for securing a valve in the neck of an aerosol vessel by forming a projection on the setting portion of the valve body, in which a rod is mounted in a housing for movement in an axial direction, and a series of spreadable levers concentric with respect to the rod are secured in the housing for swinging movement in longitudinal planes relative the rod. The rod cooperates with the inner surfaces of the working ends of the levers so that during the working stroke of the rod, the lever spread in a radial direction and form a projection on the setting portion of the valve body. The levers are provided with auxiliary arms, and the rod with a projection adapted to cooperate with the auxiliary arms during the reverse stroke to return the levers to the initial position.

3,668,825

METHOD AND APPARATUS FOR DETERMINING THE DIFFICULTY OF REMOVING POLLUTANTS BY WET SCRUBBING ACTION

Robert W. McIlvaine, Northbrook, Ill., assignor to National Dust Collector Corporation, Skokie, Ill.

Filed Aug. 28, 1969, Ser. No. 853,767
Int. Cl. B01d *47/00, 45/12*
U.S. Cl. 55—21 **20 Claims**



A method of determining the difficulty of removing pollutants from gas including the steps of passing a sample of the

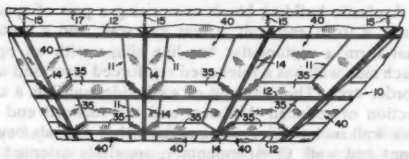
gas through a wet scrubber stage for removing some of the pollutants therefrom, measuring the amount of pollutants remaining in said gas sample after passage through the wet scrubber stage, and adjusting the pressure drop across the scrubber stage to obtain the desired level of pollutants remaining after passage therethrough.

3,668,826

SUSPENDED CEILING SYSTEM

Richard N. White, Des Plaines, Ill., and Joseph D. Wilkin, Tampa, Fla., assignors to The Celotex Corporation, Tampa, Fla.

Filed Feb. 9, 1970, Ser. No. 9,885
Int. Cl. E04b *5/52*
U.S. Cl. 52—28 **9 Claims**



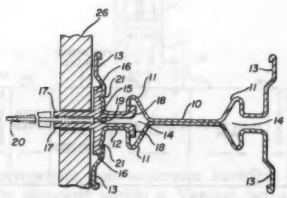
A suspended ceiling system having a repetitive modular appearance includes unique, removable, collapsible frame portions in which either finished panels or lighting fixtures can be centrally positioned away from the lower plane of the modules to form upwardly recessed coves.

3,668,827

METAL STUDDING AND ADJUSTABLE SHELF CARRIER

Paul Schwartz, 249 Brainard Drive, Youngstown, Ohio

Continuation-in-part of application Ser. No. 826,427, May 21, 1969, now Patent No. 3,562,970, dated Feb. 16, 1971. This application Sept. 21, 1970, Ser. No. 74,005
Int. Cl. A47b *57/06;* **E04c** *3/32*
U.S. Cl. 52—36 **3 Claims**



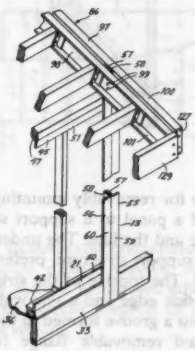
A metal studding having a web portion with spaced apart sections therein and oppositely disposed flanges on said spaced apart sections and oppositely disposed longitudinally extending channels formed in said spaced apart sections together with an elongated metal member slidably engageable against said flanges and partially within said channels so as to be adjustable thereof, the metal member having a configuration providing for the reception and attachment of an elongated shelf supporting arm, portions of the flanges being distorted into the area of the metal member so as to hold the same in adjusted position in the metal studding.

3,668,828

BUILDING CONSTRUCTION FRAMEWORK WITH RECEIVERS FOR BRACING MEANS

George E. Nicholas, 25 East Delilah Road, Pleasantville, N.J., and Howard G. Watkins, 137 East Revere Avenue, Northfield, N.J.

Filed Mar. 10, 1970, Ser. No. 18,129
Int. Cl. E04b *7/04*
U.S. Cl. 52—92 **3 Claims**



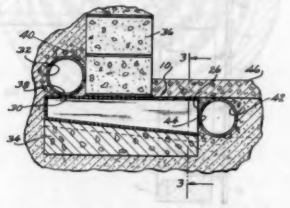
A building construction wherein a precut building framework is initially elected, and provided with receivers for interposing between a plurality of strengthening and bracing members.

3,668,829

FOOTING TILE FOR TRANSVERSE FLOW OF SEEPAGE

Melvin J. Nelson, 1608 Machinac Avenue, So. Milwaukee, Wis.

Filed Mar. 16, 1970, Ser. No. 19,907
Int. Cl. E02d *31/02*
U.S. Cl. 52—169 **2 Claims**



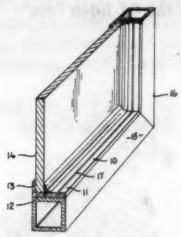
A transverse tile, preferably of molded material, to be embedded transversely in the concrete of a foundation footing to convey seepage water from an exterior drain tile to an inner drain tile. A means is included to subsequently provide a drain opening in the panel of the transverse tile after the mason work has been done, for the purpose of allowing seepage to flow into the tile.

3,668,830

CHANNEL MEMBER HAVING A REMOVAL SIDE WALL

Peter M. Frank, Islington, Ontario, and Frank M. Watts, Toronto, Ontario, both of Canada, assignors to Beautiline Showcase Systems, Downsview, Ontario, Canada

Filed Aug. 3, 1970, Ser. No. 60,587
Int. Cl. E06b 3/62
U.S. Cl. 52—400 8 Claims



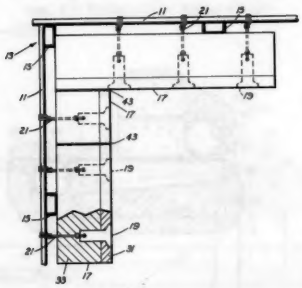
A molding strip for removably mounting and securing the marginal edges of a panel to a support structure such as a window, showcase and the like. The underside of the strip is attachable to the support structure, preferably by a pressure sensitive adhesive. The topside of the strip has a permanent flange along one side edge and a removable flange having a bead which fits into a groove formed in the top side, the permanent flange and removable flange forming a channel which receives the marginal edges of the panel. The removable flange can be removed when mounting the panel on the support structure. The removal flange when replaced is biased by the panel to releasably lock the bead in the groove. Several grooves may be provided so that several different thicknesses of panels can be accommodated by a single strip.

3,668,831

FURNACE WALL CONSTRUCTION

Larrie H. Sweet, Ramsomville, and Nelson H. Baker, Jr., Niagara Falls, both of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Nov. 28, 1969, Ser. No. 880,526
Int. Cl. F23m 5/04, 5/02
U.S. Cl. 52—484 2 Claims



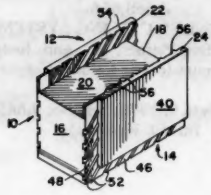
A furnace lining wall is provided by securing refractory insulating blocks in place with refractory anchors having enlarged heads fitting in depressions in the working face of the blocks and having shanks extending into the block and fastened by ties to the furnace frame.

3,668,832

PLASTIC BUILDING BLOCK

James D. Harman, R.D. #1, Hegins, Pa.

Filed June 5, 1970, Ser. No. 43,758
Int. Cl. E04c 1/10
U.S. Cl. 52—591 6 Claims



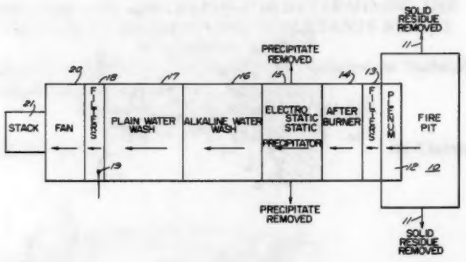
A plastic building block comprising a pair of spaced side walls, a front end wall, a rear end wall, and a bottom wall that form a rectangular box-like shape with an open top. Each side wall has a thickened reinforced layer and a thinner border area. The rear end of each side wall has a cut-away section of reduced thickness and the forward end of each side wall includes a leading section that extends beyond the front end wall. Complementary, angularly oriented tongues and grooves are defined between the leading sections of a first block and the cut-away sections of a second block. Adjacent, identical blocks are assembled into wall sections by sliding the tongues of the first block into the grooves of the second block, or vice versa, so that the thinner leading sections of the first block straddle the cut-away sections of the second block and overlap the joints formed therebetween. THe thinner border area of an upper block, which is coextensive with the exterior face of said block, straddles the border area of a lower block, said border area being coextensive with the interior face of said block. Thus, the joints formed between the upper block and the lower block are overlapped.

3,668,833

APPARATUS AND METHOD FOR INCINERATING RUBBISH AND CLEANING THE SMOKE OF INCINERATION

William Francis Cahill, Jr., 8 Danecroft Avenue, Greenville, R.I.

Filed Aug. 25, 1970, Ser. No. 66,682
Int. Cl. B01d 50/00
U.S. Cl. 55—7 14 Claims



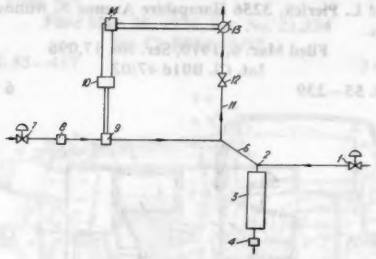
This specification discloses apparatus for carrying out a method of incinerating rubbish and cleaning the resultant smoke. The apparatus comprises essentially a fire pit, a plenum where smoke is collected, a filter, an after burner, an electrostatic precipitating chamber, an alkaline water wash, a plain water wash, a filter, and a motor driven exhaust fan which passes clean gas to a stack.

3,668,834

SAMPLE INJECTION IN GAS CHROMATOGRAPHY

David Robert Deans, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed July 31, 1970, Ser. No. 59,912
Claims priority, application Great Britain, Aug. 14, 1969, 40,648/69
Int. Cl. B01d *15/08*
U.S. Cl. 55—67 12 Claims



Sample injection in gas chromatography is accomplished by passing a sample stream separate from the carrier gas stream and diverting it into the carrier gas stream through an unrestricted limb by adjusting the relative pressures of the two streams.

3,668,835

ELECTROSTATIC DUST SEPARATOR

Pierre Vicard, 15 Cours Eugenie, Lyon, France

Filed Feb. 3, 1970, Ser. No. 8,295
Claims priority, application France, Feb. 13, 1969, 6903675; Mar. 24, 1969, 6907777
Int. Cl. B03c *3/36*, *3/41*
U.S. Cl. 55—107 7 Claims

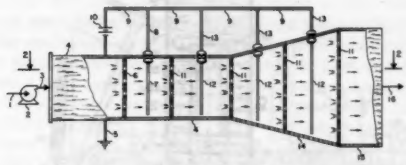
In an electrostatic dust separator having a ionizing electrode axially disposed within a Venturi, an annular nozzle produces a spray of an auxiliary substance in the gas stream issuing from the Venturi, around a polarizing electrode. The coarse particles of the spray are electrified by influence and they attract and retain the finer ionized dust particles carried by the gas. The spraying nozzle may be disposed within an auxiliary Venturi to increase the velocity of the gas and to improve impact effects between the dust particles and the sprayed particles. The ionizing electrode is preferably formed with fins to enhance the ionizing corona discharge, while the polarizing electrode is on the contrary smooth to avoid any noticeable discharge effect. The gas to be treated may be fed into the inlet of the main Venturi by an injector nozzle to produce a negative pressure whereby a portion of the gas issuing from the main Venturi may be recycled into same through an annular passage provided around the said main Venturi.

3,668,836

ELECTROSTATIC PRECIPITATOR

Harry L. Richardson, New York, N.Y., and Robert C. Craig, Morristown, N.J., assignors to Chemical Construction Corporation, New York, N.Y.

Filed Jan. 22, 1970, Ser. No. 4,947
Int. Cl. B03c *3/47*
U.S. Cl. 55—131 5 Claims



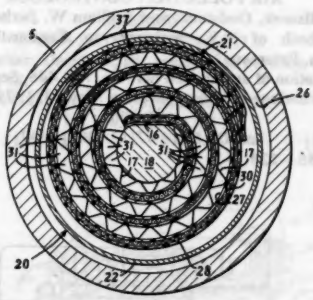
An electrical or electrostatic precipitator is provided with a grounded collector plate upstream of the electrically charged wires. The plate is juxtaposed adjacent to the wires and provides greater overall removal of entrained discrete particles from a gas stream.

3,668,837

SEPARATOR OF THE SEMIPERMEABLE MEMBRANE TYPE

Robert I. Gross, Roslyn Hgts., N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Filed Feb. 13, 1970, Ser. No. 11,236
Int. Cl. B01d *53/22*
U.S. Cl. 55—158 21 Claims

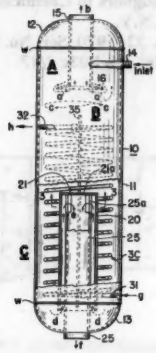


A separator is provided that is particularly suited for separating gases from liquids by selective diffusion through a semipermeable membrane. The membrane forms an enclosure into which diffusate passes and is attached to a flat portion on a surface of a supporting core, so that a strong and leaktight flat seal between the membrane enclosure and the core is formed, with the enclosure interior communicating with a discharge passage in the core. A valve is provided for shutting off flow through the core whenever diffusate flow rate or viscosity exceeds a predetermined maximum.

3,668,838
FLASH ECONOMIZER

Dalph C. McNeil, 43 Pine Street, and John A. McNeil, 161 Franklin Avenue, both of Brookville, Pa.

Filed Dec. 7, 1970, Ser. No. 95,527
Int. Cl. B01d *19/00*
U.S. Cl. 55—191 20 Claims

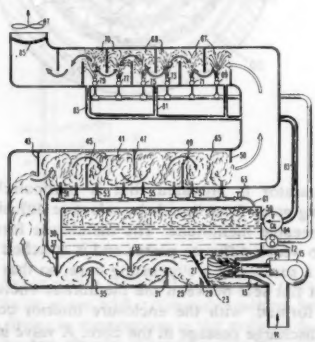


Apparatus and procedure are provided for, in one device or apparatus unit, effectively separating out pure flash or steam from a blow-down discharge and simultaneously effectively recovering heat from the blow-down discharge and, particularly from the more dense portions thereof. Flash separation is accomplished in an upper portion of an enclosed elongated container, condensate recovery and circulation are accomplished in a lower portion, and pressure reduction and heat recovery are principally accomplished in a baffle arch area below the flash separation. The liquid or condensate as discharged from the container has a minimized temperature such that it can be directly discharged into a sewage system without tempering it with and wasting added cooling water. A maximized efficiency of cooling and heat recovery are accomplished in the same container with an efficient to a maximum recovery of pure steam or flash.

3,668,839
AIR POLLUTION CONTROLLER

Joseph Misarek, Oodstock, and William W. Jaxheimer, Kingston, both of N.Y., assignors to Combustion Control Devices, Paterson, N.J.

Continuation of application Ser. No. 758,445, Sept. 9, 1968, now abandoned. This application May 28, 1971, Ser. No. 148,190
Int. Cl. B01d *47/12*; B01j *6/00*
U.S. Cl. 55—223 7 Claims

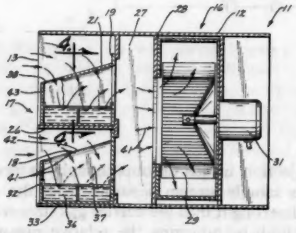


A system for sequential removal of various air pollutants or contaminants such as fly ash, chemicals and hydrocarbons from exhaust systems consists of a series of afterburning, steam, fog, spray and washing chambers which remove toxics, hydrocarbons, fly ash and other undesirables before the fumes are emitted to the atmosphere. The sulfides or other chemicals removed during this process are placed in water solution which can be further refined, reclaimed, neutralized or disposed of.

3,668,840
AIR CLEANER

Richard L. Pierick, 3256 Hampshire Avenue N, Minneapolis, Minn.

Filed Mar. 6, 1970, Ser. No. 17,096
Int. Cl. B01d *47/02*
U.S. Cl. 55—239 6 Claims

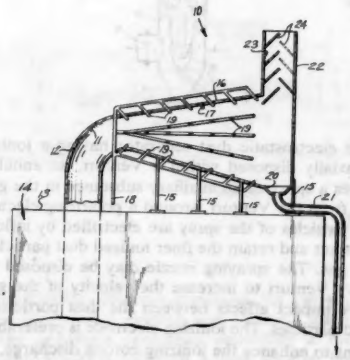


An air cleaner utilizing a series of elongate, inverted U-shaped air foils is disclosed herein. An oil retaining tray is disposed adjacent the air inlet of an enclosure which also has an air outlet. The air foils are disposed in the air inlet above the tray with the legs of the air foils extending downwardly to proximate the top of the tray. A fan is utilized to force air through the air inlet, over the legs of the air foils and then up through the inside of the air foils. Air and particles of dirt entrained in the air are accelerated along the legs of the air foils. The dirt particles attain sufficient inertia to plunge into the oil in the tray where those particles are retained while the clean air passes into the inside of the air foils.

3,668,841
ANTI-POLLUTION CHAMBER

Howard R. Nunn, 2397 Main Street, Napa, Calif.

Filed Nov. 4, 1970, Ser. No. 86,873
Int. Cl. B01d *47/00*
U.S. Cl. 55—257 1 Claim



A device for replacing common smoke stacks on industrial building roofs. This device includes a multiple number of pol-

lution sensing devices on the interior of a chamber which contains a multiple number of spray nozzles which produce a high pressure fog.

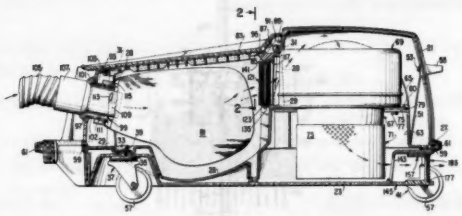
The chamber also includes a catch basin which allows the fluid to drain off into the sump.

3,668,842

VACUUM CLEANER AND EXHAUST HOUSING

William A. Batson, Pickens, and Charles T. Fromknecht, Anderson, both of S.C., assignors to The Singer Company, New York, N.Y.

Filed Mar. 20, 1970, Ser. No. 21,334
Int. Cl. B01d *46/02*
U.S. Cl. 55—417 **3 Claims**



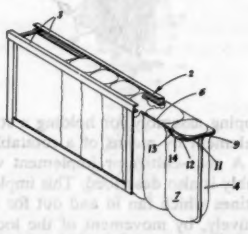
A vacuum cleaner of the canister variety for domestic use having upper and lower housing sandwiching an intermediate housing therebetween. An air inlet is formed at the front of the upper housing and an exhaust housing is secured to the rear of the lower housing. A dust bag is positioned between the upper and intermediate housing and is separated from a motor blower assembly by an apertured partition wall. A washable permanent secondary filter, fitted about a wire form frame, is positioned on the dust bag side of the aperture in the partition wall by means of a pair of slotted ribs which receive a portion of the wire frame and a cam shaped rib which also holds a portion of the wire frame. The exhaust housing includes a sliding door having spaced air slots and a rear wall having similar spaced air slots alternately offset from those of the door. A hose assembly blower connection aperture is formed in the exhaust housing adjacent to the slotted rear wall. During vacuum operation the sliding door is positioned in front of the hose assembly blower aperture and air is exhausted from the motor-blower assembly through both sets of slots, but during blower operation the door is positioned in front of the rear wall with the solid portion of the door closing off the slots in the wall of the exhaust housing to concentrate all the exhaust air through the hose assembly blower connection aperture.

3,668,843

FILTER SUPPORT CONSTRUCTION

Karl L. Westlin, and Allan R. Getzin, both of Louisville, Ky., assignors to American Air Filter Company, Inc., Louisville, Ky.

Filed Apr. 6, 1970, Ser. No. 25,929
Int. Cl. B01d *25/22*
U.S. Cl. 55—501 **3 Claims**



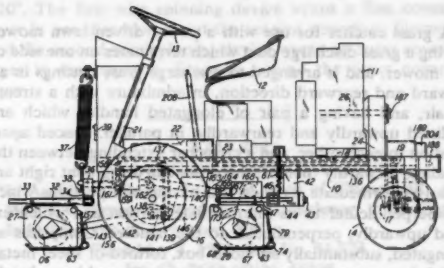
Gas filter apparatus including a flow-through filter support frame having opposed channels to receive a filter cell header frame and means cooperating with opposed sides of the filter cell header frame to resiliently urge the header frame into sealing engagement in the support channels.

3,668,844

GANG LAWN MOWER WITH SELF-SHARPENING MEANS

Sahag C. Akgulian; Donald G. Haffner, and Sherman C. Heth, all of Racine, Wis., assignors to Jacobsen Manufacturing Company, Racine, Wis.

Filed Apr. 9, 1970, Ser. No. 26,997
Int. Cl. A01d *75/30*
U.S. Cl. 56—7 **7 Claims**



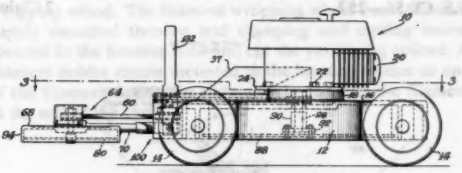
A gang lawn mowing machine having a tractor with a prime mover and ground supporting wheels. A plurality of mowers are supported on the tractor and are driven by the tractor in the cutting action of the mowers so that the mowers are powered. Pivot mountings support the mowers on the tractor for articulation of the mowers to adjust to irregular ground and for raising the mowers to a transport position compact with the tractor. A mower cutter drive train extends between the tractor prime mover and each of the mowers for rotating the mower cutter in a mowing direction of rotation. A reversing drive exists between the prime mover and the mowers for reversing the direction of rotation of the mower cutters and thereby sharpening the cutters when they are rotated in the reverse direction.

3,668,845

LAWN MOWER APPARATUS

James M. Parker, Deerfield, Ill., assignor to Parkton Corporation, Alsip, Ill.

Filed Mar. 9, 1970, Ser. No. 17,753
Int. Cl. A01d *35/26*
U.S. Cl. 56—11.6 **18 Claims**

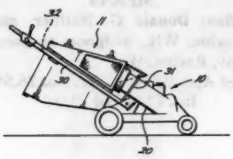


An improved rotary lawn mower having a self-contained power take-off arranged in one corner of the forward edge of the mower deck. An auxilliary unit, having a blade driven by a pulley and a belt extending to the power take-off, is supported from the deck and is movable between a trimming position in which the blade is substantially horizontal and an edging position in which the blade is substantially vertical. A cam means automatically compensates for distance changes between the pulley and the power take-off as the unit is moved between the trimming and edging positions.

3,668,846
QUICK DUMP GRASS CATCHER FOR LAWN MOWER

Warner P. Knight, 1301 Thomas Place, Fort Worth, Tex.

Filed May 12, 1971, Ser. No. 142,463
Int. Cl. A01d 35/22
U.S. Cl. 56—205 5 Claims

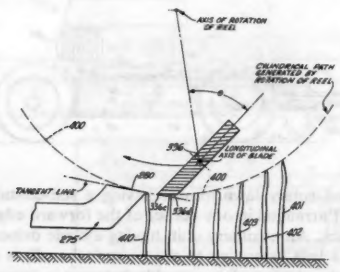


A grass catcher for use with a power driven lawn mower having a grass discharge duct which terminates on one side of the mower, and is arranged to discharge grass cuttings in an upward and rearward direction, in admixture with a stream of air, and having a pair of elongated handles which are inclined upwardly and rearwardly, in parallel, spaced apart relation to each other, and a cross bar extending between the handles, forwardly thereof, the cross bar being bent right angularly intermediate its ends and having end portions which are perpendicular to its intermediate portion and which extend upwardly, perpendicular to the handles. Comprises an elongated, substantially six sided box, formed of sheet metal, which has generally parallel sides and ends, and has a height greater than its width and a length greater than its height, which in use is arranged substantially horizontally between the upwardly and rearwardly inclined handles, rearwardly of the cross bar, and extends above and below the handles. The box has means whereby it is loosely supported on the handles, and on the cross bar, and is secured by its own weight. It has a grass inlet on its front end which in its operative position loosely surrounds the opposing end of the grass discharge duct, and has air vents on its two opposite sides, near the top thereof. The back end of the box is hinged at the top whereby it may be swung open, for convenience in dumping the contents of the box. The box has handles on the top thereof for lifting it in and out of engagement with the mower, and for dumping.

3,668,847
ROTARY CUTTING REEL, LEDGER BLADE AND BAFFLE ASSEMBLY

Carl Van Ausdall, P. O. Box 178, Bradenton, Fla.

Continuation of application Ser. No. 849,964, Aug. 14, 1969, now abandoned, which is a continuation-in-part of application Ser. No. 504,792, Oct. 24, 1965, now Patent No. 3,461,656, dated Aug. 19, 1969. This application Feb. 26, 1971, Ser. No. 119,365
Int. Cl. A01d 55/20
U.S. Cl. 56—252 2 Claims

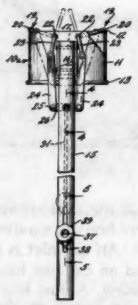


A reel, bedplate and baffle combination wherein the reel includes a central shaft, a plurality of spiders of plate-like material anchored to the shaft at equally spaced points, blades mounted on said spiders and twisted both helically about the reel axis and about their own axes the bedplate having a surface cooperating with said blades and an open front baffle surrounding the reel at top and back and cooperating with the blades and spiders to discharge cuttings ahead of the advancing reel.

3,668,848
FRUIT PICKER

Harry H. Gerkin, East 1st Street, Loogootee, Ind.

Filed May 21, 1971, Ser. No. 145,655
Int. Cl. A01g 19/08
U.S. Cl. 56—334 1 Claim

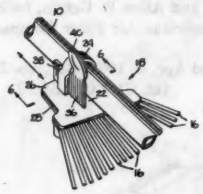


Fruit harvester apparatus for removing fruit from trees and including an elongated hollow pole with a fruit picker head mounted on one end and a pair of movable jaws mounted on the picker head to close behind a piece of fruit to permit the fruit to be separated from a tree. The jaws and the linkage which operates the jaws are retained in a non-protruding position with respect to the pole and picker head when the jaws are not in use.

3,668,849
LOCKABLE ASSEMBLY AND RAKE-CULTIVATOR IMPLEMENT FOR USING

Robert W. Bunker, 1519 West Fourth Avenue, Sault Ste. Marie, Mich.

Filed Oct. 15, 1970, Ser. No. 80,995
Int. Cl. A01d 7/00
U.S. Cl. 56—400.17 9 Claims



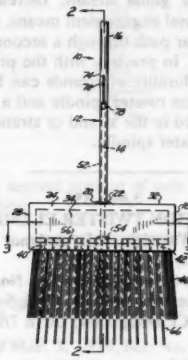
A novel gripping assembly for holding a strap element to an elongated element by means of a rotatable flat wedging cam element. A rake-cultivator implement which uses the gripping assembly is also described. This implement includes a plurality of tines which fan in and out for cultivating and raking, respectively, by movement of the lockable gripping assembly along the handle of the implement.

3,668,850

RAKE AND BROOM COMBINATION

Alan D. Horkey, 5221 Tokay Drive, Lot 108, Flint, Mich.

Filed May 13, 1970, Ser. No. 36,900
Int. Cl. A01d *7/04*; A46b *15/00*
U.S. Cl. 56—400.04 3 Claims



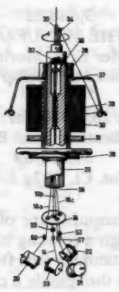
A rake and broom combination including a hollow handle having a hollow broom head secured to its lower end. The broom bristles are secured to the broom head and form an elongated hollow oval-shaped structure. A shaft is slidably mounted within the hollow handle and has a rake teeth bar transversely secured to its lower end and disposed within the broom head. Rake teeth are secured to the rake teeth bar and extend downwardly within the oval formed by the broom bristles. When the shaft is secured in its upper position, the broom bristles extend beyond the lower end of the rake teeth and the combination may be used as a broom. When the shaft is secured in its lower position, the rake teeth extend beyond the broom bristles and the combination may be used as a rake.

3,668,851

APPARATUS FOR MANUFACTURING FLEXIBLE SIGNAL TRANSMISSION CABLE FOR AERODYNAMIC BODY

Werner Heinzmann, Ottobrunn, and Siegfried Pfahl, Hagen Holthausen, both of Germany, assignors to Messerschmitt-Bolkow Gesellschaft mit beschrankter Haftung, Munchen, Germany

Original application Apr. 1, 1969, Ser. No. 812,277. Divided and this application Mar. 25, 1970, Ser. No. 25,616
Claims priority, application Germany, Apr. 6, 1968, P 17 65 133.1
Int. Cl. H01b *13/26*
U.S. Cl. 57—18 2 Claims



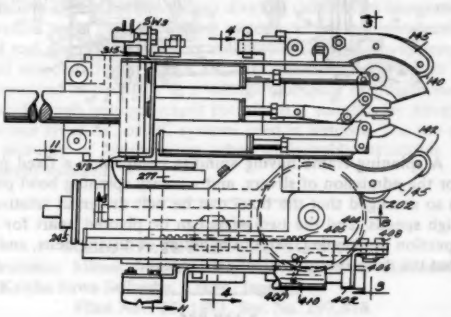
The apparatus is used to form a small diameter flexible electrical cable for transmitting control signals between a control station and a rapidly moving aerodynamic body, and the cable includes at least two parallel enamel-insulated conductor wires cemented together in parallel relation and extending centrally through a tension member formed by a large number of thin individual filaments extending parallel to the conductor wires, and further includes a comprising superposed layers wound around the tension member in opposite respective angular directions. The apparatus includes two serially arranged wire spinning devices, the first of which has a fixed spindle provided with an axial bore therethrough and a stationary guide plate arranged close to the spinning head. The guide plate has a central opening for the conductor wires and plural openings for the tension member filament strands, these openings being arranged in a circle concentric with the central opening and at angular interval of 120°. The first wire spinning device wraps a first covering layer in one direction about the tension strands or filaments, and the second wire spinning device wraps an outer covering layer in the opposite direction around the inner covering layer.

3,668,852

AUTOMATIC SPLICING APPARATUS

Vito A. Fusco; Charles T. Ogden, both of Chicago, Ill., and Walter F. Illman, Greensboro, N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed May 4, 1970, Ser. No. 34,574
Int. Cl. B65h *69/06*, *69/00*
U.S. Cl. 57—22 35 Claims



An automatic splicing apparatus for splicing yarn by wrapping filament around the yarn, comprising a housing and a drive means mounted therein which rotates a filament wrapping wheel. The filament wrapping wheel has a filament supply mounted thereon and clamping and cutting means secured to the housing hold and cut the yarn being spliced. A filament holder means mounted to the housing retains an end of the filament during the slicing cycle and cuts the filament at the end of the cycle.

3,668,853

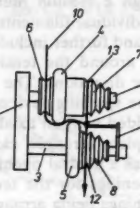
FRICTION CRIMPING OF SYNTHETIC THREADS

Otto Lang, Schweinfurt, Germany, assignor to Kugelfischer Georg Schafer & Co., Schweinfurt, Germany

Filed June 19, 1970, Ser. No. 47,685
Claims priority, application Germany, June 20, 1969, P 19 31 207.3
Int. Cl. D02g *1/08*
U.S. Cl. 57—34 HS 9 Claims

Friction crimping of synthetic threads with the aid of rotating discs characterized by the employment of the thread to be crimped for driving the discs. There may be a simultane-

ous crimping of two threads with twists of the same or of opposite hand, of which only one thread serves to drive the



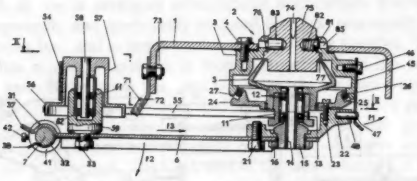
discs. Apparatus for carrying out the method of friction crimping is also provided.

3,668,854

SPINNING FRAMES

Jacques Le Chatelier, Riedisheim, France, assignor to Societe Alsacienne de Constructions Mecaniques de Mulhouse, Mulhouse, France

Filed July 28, 1970, Ser. No. 58,931
Claims priority, application France, Aug. 4, 1969, 6926659
Int. Cl. D01h *1/12, 1/20*
U.S. Cl. 57—58.89 **8 Claims**



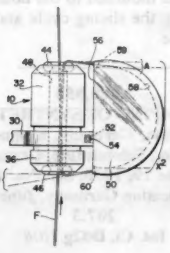
A spinning frame having spindles comprising a fixed part for the admission of slivers, and a rotary spinning bowl part, is so arranged that the bowl can be belt driven at relatively high speeds, and the two parts can be pivoted apart for inspection or cleaning, without handling of driving belts, and so that the drive is automatically disengaged.

3,668,855

TWISTER AND METHOD OF TWISTING

Richmond T. Leeson, East Greenwich, and Hans H. Richter, Warwick, both of R.I., assignors to Leesona Corporation, Warwick, R.I.

Filed June 22, 1970, Ser. No. 48,167
Int. Cl. D02g *1/02, 1/04*
U.S. Cl. 57—77.4 **28 Claims**



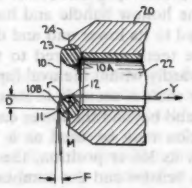
Method and apparatus are disclosed for imparting false twist to textile strand wherein a plurality of turns of twist are imparted to the strand for each revolution of a friction twister. The disclosed friction twister comprises a single hollow spindle having a pair of oppositely positioned frictional engagement means therein. The twister also includes reversing guide means which allow the strand to enter in a substantially rectilinear path through one end of the axial bore of the spindle, come into engagement with a first one of the frictional engagement means to twist the yarn, pass through the reverse guide means, thereafter contact the second of the frictional engagement means, and finally exit in a generally rectilinear path through a second end of the axial bore of said spindle. In practice with the present invention a single strand or a plurality of strands can be twisted by the use of a single friction twister spindle and a plurality of turns of twister are inserted in the strand or strands for each single revolution of the twister spindle.

3,668,856

FRICTION TWISTER ELEMENT

Hans H. Richter, Warwick, R.I., assignor to Leesona Corporation, Warwick, R.I.

Continuation-in-part of application Ser. No. 25,559, May 6, 1970. This application Nov. 16, 1970, Ser. No. 89,552
Int. Cl. D02g *1/04;* **D01h** *7/92*
U.S. Cl. 57—77.4 **19 Claims**



Disclosed is an improved friction twisting element for use in a textile yarn false twist spindle. The disclosed friction twisting element, mounted in a false twist spindle capable of rotation about its longitudinal axis, engages a strand of yarn and imparts a plurality of turns of twist to the yarn for each revolution of the spindle. The size and shape of the friction twist element are such that tension fluctuations in the yarn are minimized during the operation of the device. The size and shape of the friction element will also maximize the frictional engagement between the element and the yarn and will avoid yarn slippage that is characteristic of a friction twisting element that has a large variation between the inside and outside diameter of the yarn engaging surface.

3,668,857

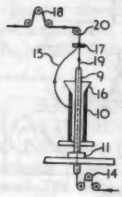
METHOD FOR THE MANUFACTURE OF CORD

Ronald S. Goy, and Peter L. E. Moring, both of Sutton Coldfield, England, assignors to Dunlap Holdings Limited, London, England

Filed Sept. 28, 1970, Ser. No. 76,008
Claims priority, application Great Britain, Oct. 11, 1969, 50,034/69
Int. Cl. D02g *3/48*
U.S. Cl. 57—157 TS **14 Claims**

A method for the manufacture of cord which comprises passing upwards through a rotating hollow spindle a continuous filament yarn substantially free from twist and simultaneously drawing off from the spindle a continuous filament yarn initially in a twisted condition, passing the yarn through a guide means thus causing the yarns to become doubled and form a cord in which the yarns are substantially free from

twist. Instead of two separate yarns a continuous length of yarn may be used, the first portion being twisted and then



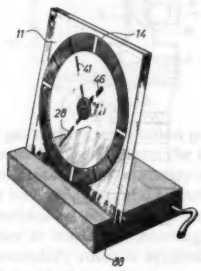
doubled with the second portion of yarn of which the following is a specification.

3,668,858

CLOCK

Rudiger Hartwig, Dresdoner Strasse 36, 7032 Sindelfingen, Germany

Filed Mar. 3, 1970, Ser. No. 16,062
Claims priority, application Germany, Mar. 4, 1969, P 19 10 818.0
Int. Cl. G04b *45/00, 19/30*
U.S. Cl. 58—2 **6 Claims**



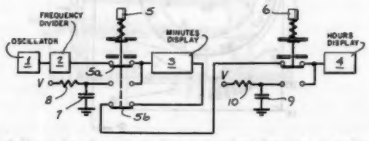
A clock in which planetary gear wheels provided with inner teeth engage on stationary elements with outer teeth to obtain uniform rotation for successive gear stages. The eccentric drive of one stage necessary for engagement is directly effected by the eccentric shape of the rotating element of the preceding stage. The rotating elements belonging to each stage act as moving elements and also as indicating elements due to their markings.

3,668,859

TIME SETTING DEVICE FOR AN ELECTRONIC CLOCK

Herbert S. Polin, and Gustavo Kuhn, both of Veyrier, Switzerland, assignors to Paul Vogel, Geneva, Switzerland

Filed June 5, 1970, Ser. No. 43,821
Claims priority, application Switzerland, Mar. 7, 1969, 10164/69
Int. Cl. G04c *3/00;* **G04b** *27/00*
U.S. Cl. 58—23 R **5 Claims**



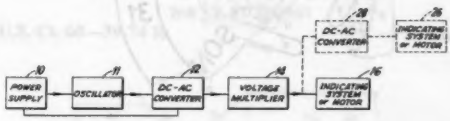
The invention relates to a time setting device for an electronic watch comprising an oscillator, a frequency divider and counting and display devices for the minutes and for the hours connected in series. This device comprises further at least one commutator to switch the input of the counter of the watch onto a capacitor, a resistor charging said capacitor, the forward or backward stepping of this counter of one unit being controlled by the discharge of said capacitor.

3,668,860

HIGH VOLTAGE WATCH POWER SUPPLY

Gunther Rudalph Diersbock, Waterbury, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Nov. 5, 1970, Ser. No. 87,215
Int. Cl. G04c *3/00*
U.S. Cl. 58—23 BA **8 Claims**



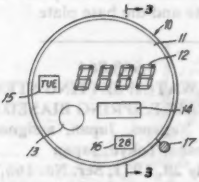
A power supply for a watch including voltage multiplying means or transforming means to increase the voltage of a power cell to a higher voltage capable of operating electrical and electronic devices used in watches requiring voltage higher than the conventional 1.5 volts. These include highly efficient quartz oscillators and dividing units, MOS integrated circuits, solid state indicating systems, crystals, piezoelectrical and electrostatic motors and piezoelectric alarm systems, and associated systems. A DC–AC converter or chopper is connected respectively to a voltage multiplier or transformer and the high voltage output therefrom is suitable for driving various types AC or DC systems used in watches. The use of a plurality of batteries or other undesirable structures is thereby avoided.

3,668,861

SOLID STATE ELECTRONIC WATCH

Hiromitsu Mitsui, Nagano, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Nov. 10, 1971, Ser. No. 197,378
Claims priority, application Japan, Nov. 17, 1970, 45/100709
Int. Cl. G04b *19/30;* **H03k** *19/14*
U.S. Cl. 58—50 R **10 Claims**



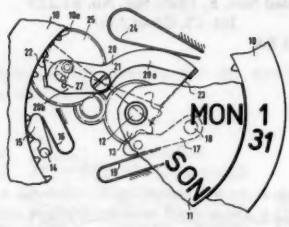
A watch is provided with a liquid crystal display system operable at high levels of ambient illumination and a solid state display system operable at low levels of ambient illumination. A photo-transistor selects the display system appropriate to the ambient light level.

3,668,862

TIMEPIECE SHOWING THE DATE AND DAY OF THE WEEK

Gunter Scholz, Schramberg, Germany, assignor to Gebruder Junghans G.m.b.H., Schramberg, Germany

Filed July 15, 1971, Ser. No. 162,780
Claims priority, application Germany, Aug. 3, 1970, P 20 38 552.8
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 5 Claims



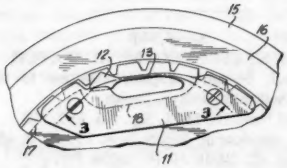
A timepiece including a worm device operable to abruptly shift a drum lever. The lever, when shifted, is operable to abruptly shift date and/or time indicating means.

3,668,863

JUMPER MEMBER CONSTRUCTION IN A CALENDAR WATCH

Mamoru Miyasaka, Shimosuwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed July 27, 1971, Ser. No. 166,531
Claims priority, application Japan, July 30, 1970, 45/75484
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 3 Claims



In a calendar watch, a jumper mechanism for operating with a toothed member such as a calendar wheel comprises a thin plate connected to a jumper by means of a flexible arm. The plate is mounted above a base plate in a construction such that the jumper lies out of the plane of the thin plate between the thin plate and the base plate.

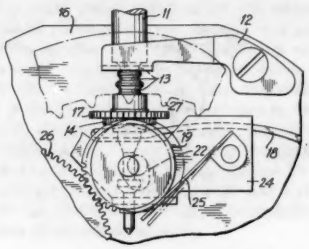
3,668,864

CALENDAR WATCH SETTING STEM WITH DISPLACEABLE SPRING BIASED GEAR

Mamoru Miyasaka, Nagano, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed July 28, 1971, Ser. No. 166,753
Claims priority, application Japan, July 30, 1970, 45/66348
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 3 Claims

In a calendar watch, the watch stem has three positions available for independently setting the time, setting the date and winding the watch. Independence of these functions is achieved by the use of gears mounted slidably on a spline which is part of the stem, and by a gear displaceable transversely of its axis, which makes it possible to move the spline into contact with the gears without causing damage even when the teeth of the spline and the corresponding teeth in the gears are not in register.

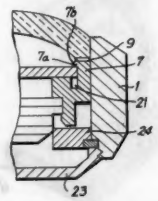


3,668,865

DIAL AND MOVEMENT FIXING STRUCTURE FOR A WATCHCASE

Masahide Hirabayashi, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed June 8, 1971, Ser. No. 151,021
Claims priority, application Japan, June 9, 1970, 45/49118
Int. Cl. G04b *19/06*
U.S. Cl. 58—127 B 10 Claims



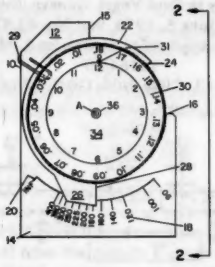
The upper portion of an annular structure has surfaces for engaging the inner face and the periphery of a dial. The structure is notched to receive a projection at the periphery of the dial and to prevent thereby rotation of the dial.

3,668,866

ALCOHOLIC CONCENTRATION INDICATOR

Herbert Z. Lund, 3610 Kirby Drive, Greensboro, N.C.

Continuation-in-part of application Ser. No. 35,416, May 5, 1970, now abandoned. This application July 30, 1970, Ser. No. 59,565
Int. Cl. G07c *1/00*
U.S. Cl. 58—152 22 Claims



A rotating dial-type indicator for illustrating the approximate theoretical alcoholic concentration in the blood of an

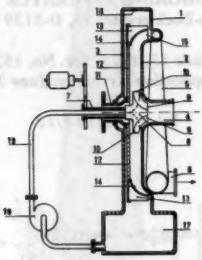
average man as related to the volume of alcohol consumed, weight of the individual, and time elapsed. The indicator includes at least two circular scales, one being rotatable with respect to the other; one of the scales representing time, the other representing alcoholic concentration in the blood. A limit means is provided for discreetly rotating one of the scales throughout a prescribed arc, which may be selectively varied according to the weight of an individual.

3,668,867

COMPRESSOR GAS TURBINE INSTALLATION

Pieter van Staveren, Pijnacker, Netherlands, assignor to Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid, Handel en Verkeer, The Hauge, Netherlands

Filed Feb. 26, 1970, Ser. No. 14,590
Claims priority, application Netherlands, Feb. 26, 1969, 6903027
Int. Cl. F02c *9/08*
U.S. Cl. 60—39.28 **2 Claims**



A compressor gas turbine installation provided with a heat-exchanger for transferring heat from the exhaust gases of the gas turbine on to the compressed energy-medium and a combustion chamber with an automatic control of the fuel supply for keeping the turbine-outlet temperature constant.

As a compressor at least one centrifugal fluid vanes compressor with a secondary rotor is applied, the primary rotor of it being coupled with the turbine.

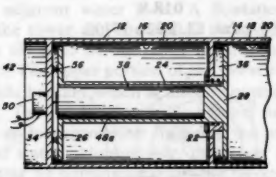
In the liquid duct to the compressor an adjusting device is incorporated for controlling the liquid supply, with which device the power delivered by the compressor gas turbine installation can be controlled.

3,668,868

PREPACKAGED LIQUID ROCKET POWERPLANT FEED SYSTEM

Leroy J. Krzycki, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed July 30, 1970, Ser. No. 64,918
Int. Cl. F02c *3/12*
U.S. Cl. 60—39.48 **7 Claims**



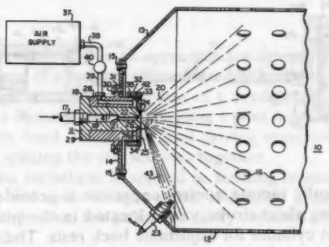
A propellant feed system for a rocket having mechanically linked pistons attached to longitudinally involuted rolling metal bladders. Each propellant tank contains a rolling metal bladder positive expulsion device in which the propellant is hermetically sealed and stored. In operation, propellant expulsion occurs when a high pressure gas forces the piston assembly to traverse the propellant tanks longitudinally while the metal bladders are forced to roll back on themselves and follow. As a result, the rolling metal bladders are plastically deformed as they roll around the initial involution, effectively turning themselves outside-in, and the liquid propellants contained therein are expelled through a flow control device into the thrust chamber assembly for combustion and thrust generation.

3,668,869

FUEL SPRAY IGNITION ATOMIZER NOZZLE

Serafino M. De Corso, Media, and Chester A. Jersey, Wallingford, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 28, 1971, Ser. No. 110,424
Int. Cl. F02g *1/00*
U.S. Cl. 60—39.74 R **10 Claims**



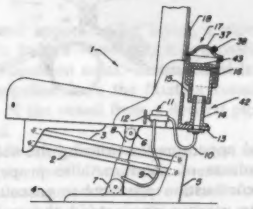
A liquid fuel spray atomizer nozzle for use with a gas turbine during combustion chamber fuel ignition, comprising a member having a high pressure air blast passageway for directing a stream of air, angularly in relation to the direction of fuel spray from a nozzle into the combustion chamber, so as to atomize and forcibly blow at least a part of the fuel toward an ignition device into ignition proximity therewith. The air blast can be blown directly across the fuel spray pattern or may be directed toward a side of the spray pattern. In all cases, the air must be under sufficient pressure to deflect and atomize the fuel spray sufficiently to provide for its ignition by the spark gap or other igniter.

3,668,870

COMBINATION HYDRAULIC-PENUMATIC SUSPENSION SYSTEM FOR VEHICLE OCCUPANTS

Garth O. Hall, New Berlin, Wis., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 11, 1970, Ser. No. 18,487
Int. Cl. F15b *7/00*; F01b *31/00*
U.S. Cl. 60—54.5 R **2 Claims**



A vehicle occupant support suspension system involving a first hydraulic cylinder interposed between an occupant support and the vehicle frame. A connection line leads from the

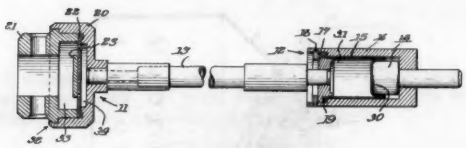
first hydraulic cylinder to a second hydraulic cylinder. The second hydraulic cylinder has a fixed member and a movable member. The movable portion of an air cylinder that has fixed and movable portions is attached to the movable member of the second hydraulic cylinder. The movable member of the second hydraulic cylinder and the movable portion of the air cylinder move together in response to pressure both in the second hydraulic cylinder and in the air cushion.

3,668,871

HYDRAULIC REMOTE CONTROL DEVICE

Hans Berndt, and Hubert Kreuzer, both of Donau, Germany, assignors to Neuweg Fertigungs GmbH, Munderkinger Wurttemberg, Germany

Filed July 13, 1970, Ser. No. 54,358
Claims priority, application Germany, July 16, 1969, G 69 28 117
Int. Cl. F15b *7/00*
U.S. Cl. 60—54.5 R **6 Claims**



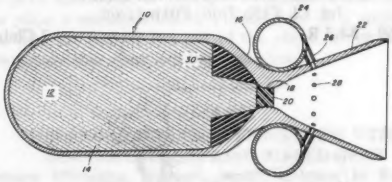
A hydraulic remote control apparatus is provided for use in operating short-stroke valves located in the piston of an adjustment cylinder for adjustable back rests. The apparatus includes a pair of remotely located hydraulic chambers interconnected by means of a fluid-carrying conduit. A first hydraulic chamber is provided with a diaphragm and disk arrangement which spans the chamber to form fluid-tight operating and control compartments therein. A second hydraulic chamber has a smaller cross-section than the first chamber and is provided with a rolling elastomeric diaphraqm so that the volume of the second hydraulic chamber can be reduced by displacement of the plunger in a manner sufficient to deflect the rolling diaphragm.

3,668,872

SOLID PROPELLANT ROCKET

Albert T. Camp, Indian Head, and Alan McCone, Jr., Hyattsville, both of Md.

Filed Jan. 30, 1967, Ser. No. 614,525
Int. Cl. C06d *5/00;* **F23r** *1/00*
U.S. Cl. 60—207 **15 Claims**



A method and apparatus for utilizing the volatility of the combustion products of solid metallic propellants to accelerate metal combustion products to gaseous velocity by recondensing the gaseous products in the rocket envelope behind the throat of the nozzle. A further useful effect is accomplished by the reaction between the steam formed in the condensation reaction and an added fuel to form additional moles of working gas.

3,668,873

BIPROPELLANT ROCKET PROCESS USING NITRIDABLE FUEL

William C. Bauman, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 14, 1959, Ser. No. 846,509
Int. Cl. C06d *5/06, 5/08, 5/10*
U.S. Cl. 60—211 **6 Claims**

1. The process which comprises burning in a self-sustaining manner and within a rocket combusion chamber having a directional outlet to provide thrust

a. a nitridable fuel with

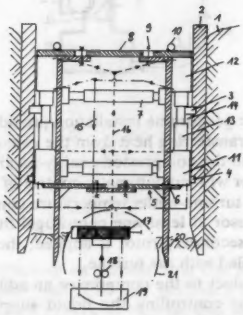
b. an oxidizing nitrogen source material which supplies reactive nitrogen to said fuel thereby evolving reaction products containing nitrides and free hydrogen, said nitrogen source material being selected from the group consisting of guanidine, 1,6-diamino-5-guanidine, 1,4-diamino-diguanidine triaminoguanidine, 5-amino-tetrazole and hydroxylamine.

3,668,874

SHORING APPARATUS

Josef Krings, Hans-Bockler-Str. 23, D-5139 Oberbruch, Germany

Filed June 15, 1971, Ser. No. 153,291
Claims priority, application Germany, June 30, 1970, P 20 32 155.5
Int. Cl. E21d *5/12*
U.S. Cl. 61—41 A **4 Claims**



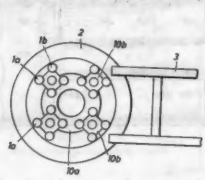
Apparatus for shoring the walls of trenches or ditches including fluid motors carried by a framework and being adapted to cooperate with sheet members for forcing the sheet members into place to support the trench walls and for removing the sheet members after work has been completed.

3,668,875

OFFSHORE TERMINAL

Otto Sander, and Alexander Ulpe, both of Duesseldorf, Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed July 15, 1970, Ser. No. 55,200
Claims priority, application Germany, July 23, 1969, P 19 38 018.8
Int. Cl. E02b *17/02*
U.S. Cl. 61—46 **1 Claim**



An offshore terminal is constructed from tubing to establish a resiliently yielding tower. A floating platform as

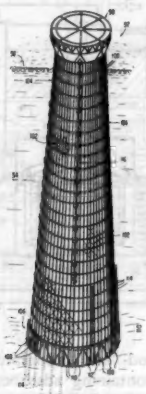
docking and cargo handling berth is linked to the tower by means of a floating collar through which impact forces acting on the platform are reacted into the tower. Different embodiments include single pipe and plural pipe tower constructions as well as outrigger-like platforms and platforms traversed by the tower.

3,668,876

OFFSHORE TOWER APPARATUS AND METHOD

Albert M. Koehler, Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.

Filed Apr. 20, 1970, Ser. No. 30,098
Int. Cl. E02b *17/00*; E02d *21/00*; E04h *12/08*
U.S. Cl. 61—46.5 20 Claims



A tower suitable for use in offshore well operations and the like including a plurality of sloping jacket legs extending from the bed of the body of water to a position above the surface of the body of water for supporting a platform thereupon. The jacket legs are reinforced by a surrounding shell of diamond patterned cross braces and a plurality of girder rings lying in a plurality of planes normally with the central axis of the tower. The girder rings are supported against deformity by a bicycle spoke reinforcing system at each girder ring level.

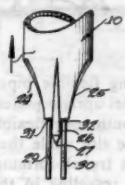
The method aspects of the invention include constructing the tower in a generally horizontal posture upon a plurality of generally upright columns. The construction steps include forming a plurality of girder rings and erecting the girder rings upon the columns. Jacket legs are connected between adjacent girder rings along the length of the offshore tower and the tower legs are enclosed within an outer shell of cross bracings. The offshore tower, following construction, is launched into a body of water for transportation to a selected marine site by constructing the tower longitudinally upon a rail having one end thereof lying adjacent a sheet pile wall which permits the lower end of the rail to be positioned below the adjacent water level. A floatation system connected to the tower and the wall is removed to permit the base of the tower to be buoyantly lifted from the construction support. The upper portion of the tower rests upon a rail bearing guide bracket which is initially positioned above the water level. The rail bearing guide bracket may be lifted off the rail by an incompressible fluid and the tower slides into the body of water. Alternatively, the tower may be jacked into the water by conventional jacking devices. Upon being erected at an offshore location, conductors may serve in a dual capacity as conductors and piles, or piles may be inserted into skirt pile casings surrounding the base of the tower and driven into the bed of the body of water by a stinger guided by a rotating truss.

3,668,877

PILE SECTION FOR FORMING A PILOT HOLE

Gabriel Fuentes, Jr., 1501 Ashford Avenue, Santurce, P.R.

Original application Nov. 20, 1967, Ser. No. 684,297, now Patent No. 3,522,707, which is a continuation-in-part of application Ser. No. 609,102, Jan. 13, 1967, now Patent No. 3,449,958. Divided and this application Feb. 2, 1970, Ser. No. 12,492
Int. Cl. E02d *5/22*; E21b *11/00*
U.S. Cl. 61—53 3 Claims



This invention relates to apparatus for driving a concrete piling formed of a number of concrete pile sections which are spliced together to form a piling of a predetermined length including a dummy pile for providing a pilot hole, special pile sections for hard or other special driving conditions, and a sleeve for splicing the pile sections together.

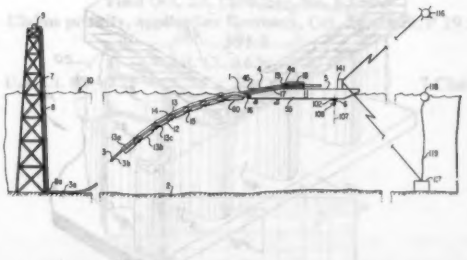
The same technique is applied to forming retaining walls, bulkheads and even to light poles, telephone poles and the like, in which case, the poles are easily repaired or replaced if damaged.

3,668,878

METHOD AND APPARATUS FOR LAYING PIPELINES

Jerry J. Jones; Delbert L. Keenon; William A. Morgan, and Joe C. Lochridge, all of Houston, Tex., assignors to Brown & Root, Inc., Houston, Tex.

Filed Apr. 9, 1969, Ser. No. 814,558
Int. Cl. F16l *1/00*; B63h *25/42*
U.S. Cl. 61—72.3 21 Claims



A method and apparatus for laying a pipeline on a submerged surface from a vessel which is provided with one or more vessel propulsion units. Tension and lateral force exerted on the pipeline from the floating vessel are detected. The deviation of the vessel from a desired pipelaying course is also detected.

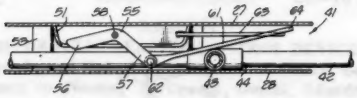
The thrust effect of the vessel propulsion units is adjusted to insure that the desired tension is exerted on the pipeline. The vessel is also rotated to relieve lateral force interacting between the vessel and the pipeline. As a matter of subordinated priority, the thrust effect of the vessel propulsion units is adjusted in an effort to tend to restore the vessel to the desired or predetermined course and maintain the vessel on this course.

3,668,879

APPARATUS FOR BURYING RISER PIPE

Robert K. Ogle, Shafter, Calif., assignor to Shafter Concrete Pipe Co., Shafter, Calif.

Filed July 22, 1971, Ser. No. 165,026
Int. Cl. E02f 5/10; F16l 1/00; E03f 5/00
U.S. Cl. 61—72.6 **6 Claims**



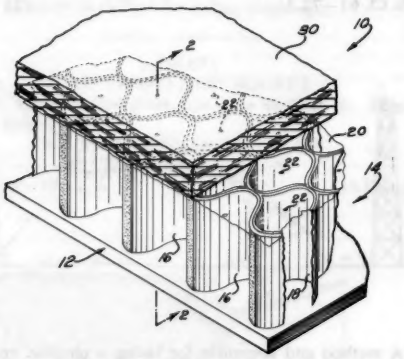
Apparatus for burying flexible pipe with attached risers employs a pair of parallel upright plates defining an open-top slot between them. Continuous flexible pipe with attached risers is guided into the slot while the plates move forward longitudinally behind a trench-forming machine, the lower portions of the plates traveling in the trench. Hold-down mechanism in the slot holds the pipe down for subsequent covering with earth as the trench is backfilled. The hold-down mechanism permits the attached risers to pass through the use of a pivoted member having a pair of arms, one of which always overlies a portion of the flexible pipe. An actuator bar connected to the pivoted member is engaged by the risers to swing the member about its pivot to permit passage of each riser between the arms. Also, the pair of plates are pivotally connected to the trench-forming member and power means are provided for swinging the pair of plates to change their angular position.

3,668,880

CAPILLARY INSULATION

John P. Gille, Littleton, Colo., assignor to Martin Marietta Corporation, Friendship Intl. Airport, Md.

Filed Oct. 16, 1970, Ser. No. 81,440
Int. Cl. F17c 13/00
U.S. Cl. 62—45 **12 Claims**



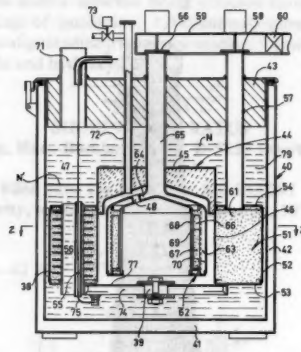
A capillary insulation assembly for insulating low temperature liquids consists of a cellular core defining discrete cells and a capillary cover having at least one or more openings per cell attached to the liquid side of the cellular core. A structurally stable liquid-gas interface forms at each of the openings preventing the entry of liquid into the cell and thereby positioning a layer of gas between the liquid and the container wall. A thermal barrier in the form of an insulative layer is interposed between the capillary cover and the contained liquid with the insulative layer being operative to insulate the gas-liquid interface from subcooled liquid in the container thereby to maintain the temperature at the interface at the saturation temperature.

3,668,881

ADSORPTIVE CRYOPUMPING METHOD AND APPARATUS

Jean-Jacques Thibault, Saint Martin D'Uriage, and Jacques Carle, Saint Martin D'Heres, both of France, assignors to L'Air Liquide Societe Anonyme pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris, France

Filed July 16, 1970, Ser. No. 55,482
Claims priority, application France, Dec. 1, 1969, 6941309
Int. Cl. B01d 5/00
U.S. Cl. 62—55.5 **10 Claims**



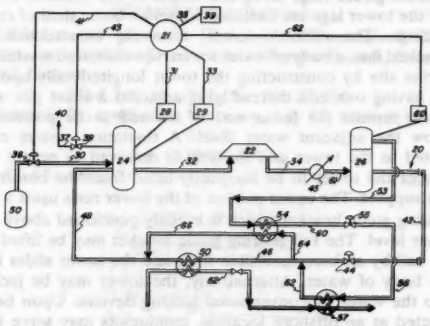
Cryopumping method and apparatus in which two cryopump chambers containing adsorbent are successively cooled and used to evacuate a third chamber by cryopumping. The first chamber to be cooled is used to evacuate the second chamber when both of the pump chambers are out of communication with the third chamber and before the second chamber is cooled. Then the first chamber is put into communication with the third chamber after the first and third chambers are sealed from each other.

3,668,882

REFRIGERATION INVENTORY CONTROL

Jan A. Sarsten, Millington, N.J.; Kenneth I. Zacks, Oxshott, England, and Michael C. Myers, Tripoli, Libya, assignors to Esso Research and Engineering Company

Filed Apr. 29, 1970, Ser. No. 32,896
Int. Cl. F25b 45/00
U.S. Cl. 62—77 **16 Claims**



An apparatus and process for controlling refrigeration in a closed cycle. An inventory recorder and controller in communication with major holdup locations in the refrigeration

circuit determines the amount of the refrigerant in the system. The amount is measured, recorded and maintained by means responsive to the difference between a set value and the value measured by the inventory recorder and controller. The apparatus and method is applicable to a multicomponent refrigerant where individual control is maintained over each component.

3,668,883

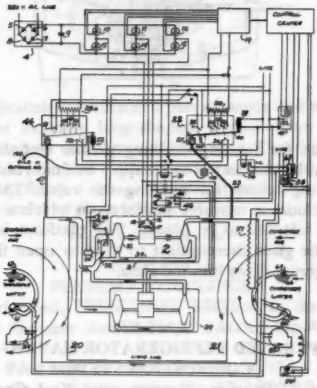
CENTRIFUGAL HEAT PUMP WITH OVERLOAD PROTECTION

John D. Ruff, 206 Birch Street, and Phillip R. Wheeler, 209 Pine Street, both of Alexandria, Va.

Continuation-in-part of application Ser. No. 37,779, May 15, 1970. This application June 12, 1970, Ser. No. 45,603

Int. Cl. F25b *1/00*

U.S. Cl. 62—158 **7 Claims**



A variable capacity air conditioning system for heat pump operation using small centrifugal compressors and including capacity reducing methods to prevent overloading when starting up the compressors, and including methods to remove the refrigerant liquid from the evaporator while the system is not in use, also to prevent overloading when restarting.

3,668,884

REFRIGERATION SYSTEM, HEAT RECOVERY SYSTEM, REFRIGERATED GAS COMPRESSION SYSTEM AND BRAYTON CYCLE SYSTEM

William H. Nebgen, 4824 43rd Street, Woodside, N.Y.

Filed May 5, 1970, Ser. No. 34,717

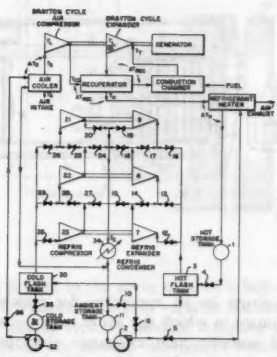
Int. Cl. F25b *1/10*

U.S. Cl. 62—228 **3 Claims**

A refrigeration system in which cold refrigerant liquid is produced by permitting refrigerant vapor to flash from a batch of ambient temperature refrigerant liquid at progressively decreasing temperatures and pressures, which cools down the unvaporized liquid. Vapors are compressed by refrigerant compressors, cooled and condensed at ambient temperature, and used for succeeding refrigerant liquid batches.

The above refrigerating system is preferably driven by a hot refrigerant liquid at progressively decreasing temperatures and pressures, thus cooling the remaining liquid to about ambient temperature. The vapors flashed drive refrigerant turbines, each of which drives a refrigerant compressor, and after expansion the vapor is cooled and condensed at ambient temperature.

At the start of each cycle, as the batch of hot refrigerant liquid starts to flash the pressure available to the refrigerant expanders is at a maximum. At the same time, as the batch of ambient temperature refrigerant liquid starts to flash, the compression ratio required of the refrigerant compressors is at a minimum. Conversely, at the end of each cycle the pressure available to the expanders is at a minimum and the compression ratio required of the compressors is at a maximum. The refrigerant expanders and compressors therefore are valved sequentially so that at the start of the cycle the expanders are in series and the compressors are in parallel and at the end of the cycle the expanders are in parallel and the compressors are in series.



In another form of the invention, in an open recuperated Brayton cycle engine, air is compressed with refrigeration at compressor inlet at least 50° F. below ambient and to from 0.9 to 1.1 of a calculated optimum compression ratio raised to the 0.286 power.

3,668,885

AIR COOLED ARTIFICIAL ICE RINK

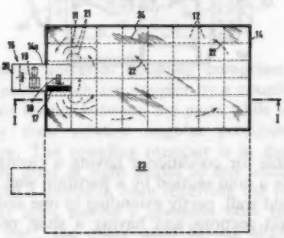
Siegfried Kuebler, Uberlingen, Germany, assignor to Firma Kuebler & Co., Singen/Hohentwiel, Germany

Filed Oct. 23, 1970, Ser. No. 83,503

Claims priority, application Germany, Oct. 24, 1969, P 19 53 591.2

Int. Cl. A63c *19/10*

U.S. Cl. 62—235 **7 Claims**



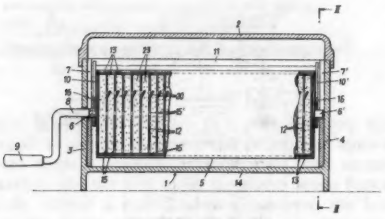
An air cooled artificial ice rink including a plurality of independent modular units, each provided with a similar and removable refrigerator.

3,668,886

FREEZING APPARATUS

Hans Hofer, Lidmanskygasse 33, 9010 Klagenfurt, Austria

Filed Aug. 24, 1970, Ser. No. 66,340
Claims priority, application Austria, Aug. 29, 1969, A 8308-69
Int. Cl. F25c 7/12
U.S. Cl. 62—346 8 Claims



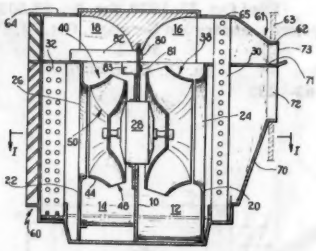
A freezing drum in an apparatus for making ice cream from a liquid mass in which the drum is immersed comprises a plurality of metallic heat exchange elements distributed throughout the interior of the drum. The heat exchange elements are in heat exchange contact with the interior wall of the drum and are surrounded by a refrigerant filling the interior of the drum.

3,668,887

AIR CONDITIONING APPARATUSES

Valerio Giordano Riello, Legnago, Italy, assignor to Riello Condizionatori S.A.S. di Giordano Riello & C., Bevilacqua, Verona, Italy

Filed Aug. 4, 1970, Ser. No. 60,902
Claims priority, application Italy, Aug. 7, 1969, 20671 A/69
Int. Cl. F25d 23/12
U.S. Cl. 62—262 11 Claims



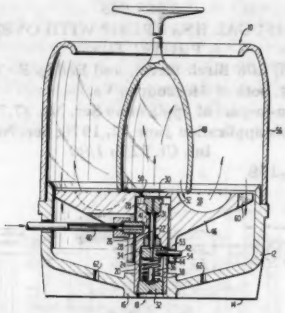
A reversible air conditioner having a casing divided in a warm and in a cold section by a partition wall, a motor supported in said wall, partly extending in one and partly in the other of said sections and having a shaft projecting from either its ends, a fan in each section for promoting air circulation in each section, said fans being of combined inlet axial and delivery tangential flow type, having recesses oppositely to their axial inlets, and being arranged back-to-back in said sections about the opposite ends of said motor shaft, and the said motor being substantially compenetrated in said recesses of fans.

3,668,888

DEVICE FOR FROSTING DRINKING GLASSES

Donald J. Roslonski, Pennsauken, N.J., assignor to Frost-A-Glass Corporation, Trenton, N.J.

Filed Mar. 10, 1970, Ser. No. 18,254
Int. Cl. F25d 17/02
U.S. Cl. 62—373 9 Claims



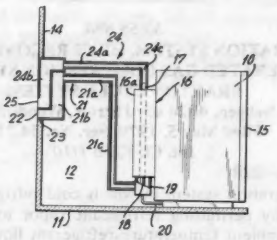
A device for frosting drinking glasses including a valve adapted to be connected to a supply of fluid refrigerant and an actuating means for opening the valve. The actuating means includes a movable platform on which a glass to be forsted is adapted to be placed. The platform is moved by pushing the glass thereagainst to thereby open the valve so that refrigerant flows into the glass.

3,668,889

GAS-OPERATED REFRIGERATOR HAVING SEALED COMBUSTION SYSTEM

Olov Tage Magnusson, Bromma, and Karl Gosta Lennart Kenneryd, Vallingby, both of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Aug. 19, 1970, Ser. No. 65,131
Claims priority, application Sweden, Sept. 12, 1969, 12566/69
Int. Cl. F23j 11/00; F25b 15/00
U.S. Cl. 62—476 11 Claims



A heat-operated refrigerator heated by a gas burner and a heating flue associated therewith is disposed in a space having an apertured exterior side wall. The heating flue and burner form parts of a sealed combustion system which includes a first conduit for supplying all of the combustion supporting air to the burner to form a combustible gas mixture with gas supplied thereto and a second conduit for withdrawing all of the flue gases from the upper end of the flue. The ends of the first and second conduits removed from the burner and flue, respectively, are open and terminate in the apertured side wall, the open end of the first conduit serving as an inlet for ambient air and the open end of the second conduit serving as an outlet for flue gases. The flue gas outlet

is disposed above the air inlet. The air inlet and flue gas outlet have the same cross-sectional areas and are flush with the outer surface of the exterior wall.

3,668,890

BRACELET WITH PLURALITY OF INTERCHANGEABLE COUPLING MEMBERS FOR VARYING THE LENGTH THEREOF

Jacques Broido, 18 Chemin Challendia, Geneva, Switzerland

Filed Sept. 29, 1970, Ser. No. 76,432

Claims priority, application Switzerland, Oct. 16, 1969, 15579/69

Int. Cl. A44c *5/00*

U.S. Cl. 63—3 **5 Claims**

A watch bracelet comprises a pair of bands and a coupling member, for example loop-shaped, chosen from a set of coupling members of different dimensions. Two free ends of the band are provided with means for releasably and interchangeably fixing a chosen coupling member to the bands to form a bracelet of given length.

3,668,891

FLEXIBLE COUPLINGS

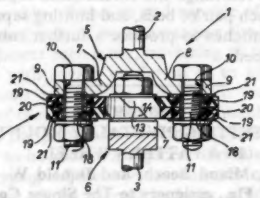
Gustavo Brizzolesi, Milan, Italy, assignor to Societa Applicazioni Gomma Antivibranti "SAGA" S.p.A., Milan, Italy

Filed Sept. 30, 1970, Ser. No. 76,924

Claims priority, application Italy, Jan. 17, 1970, 19482 A/70

Int. Cl. F16d *3/62*

U.S. Cl. 64—12 **6 Claims**



A flexible transmission coupling comprises an annular resilient member made up from a number of small resilient plates joined and to end to form a ring. The shafts to be coupled are each formed with a fork or tripod at their ends and these are bolted to the ring at the junctions of the plates so that their ends are circumferentially displaced from one another. The plates have a stepped configuration with parallel end portions displaced from one another in a direction normal to the plane of the plates and incorporate a loop of reinforcing wire in the shape of a figure of eight.

3,668,892

FLEXIBLE DRIVE COUPLING

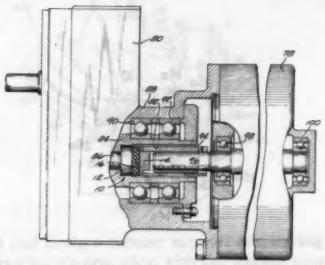
Richard E. Alsch, Lannon, Wis., assignor to Graham Transmissions, Inc., Menomonee Falls, Wis.

Filed Oct. 29, 1969, Ser. No. 872,043

Int. Cl. F16d *3/64*

U.S. Cl. 64—14 **8 Claims**

A drive coupling between two rotatable members in a drive system is provided wherein each of the members includes a pair of angularly spaced V-shaped axial projections. The V-shaped projections on one member are arranged between the V-shaped projections on the other member and together define a generally X-shaped opening therebetween. An X-shaped member of flexible material is arranged in the opening to provide a drive connection between the members.



The coupling is used in the drive train of a belt or motorized drive to a gear reducer and in a variable transmission of the disc and ball galaxy type. A flexible coupling together with clearance provide for limited movement between an input member and its connection in the drive train to achieve desired bearing loading.

3,668,893

SYNCHRONOUS UNIVERSAL COUPLING

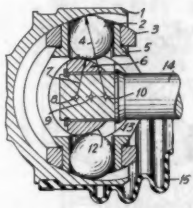
Leopold F. Schmid, Leharstrasse 8, D 7000 Stuttgart, 1, Germany

Filed Feb. 22, 1971, Ser. No. 117,367

Claims priority, application Germany, Aug. 12, 1970, P 20 39 965.9

Int. Cl. F16d *3/30*

U.S. Cl. 64—21 **5 Claims**



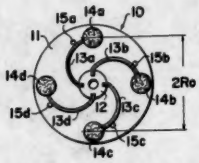
A synchronous universal coupling comprises inner and outer pivotal parts which are couples by a coupling member which transmits torque between the parts while enabling the parts to vary their relative angular positions with full synchronization. The coupling member is in the form of a cross with four arms at right angles to one another, two of the arms having a common bore receiving the inner pivotal part, the other arms having a common bore receiving the inner pivotal part, the other arms having aligned, spaced bores on opposite sides of the inner part receiving balls rollably engaged with respective surfaces of the inner and outer parts. The inner part may be cylindrical to fit the shape of the common bore, or alternatively the inner part may comprise a spherical portion received in the coupling member with cylindrical journals rotatable in the ends of the common bore.

3,668,894

SLIP-CLUTCH

Tetsuji Yoshii, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 14, 1970, Ser. No. 71,682
Claims priority, application Japan, Sept. 19, 1969, 44/76029; Oct 2, 1969, 44/78822
Int. Cl. F16d 7/02
U.S. Cl. 64—30 R 7 Claims



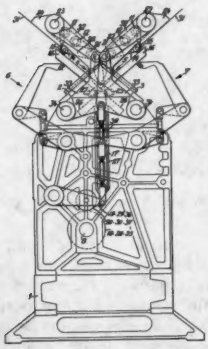
A slip-clutch having frictionally driving and driven rotable members. The driving members are supported by springs so that, when the coefficient of friction between the driving and driven members is varied, the driving members are radially shifted or displaced to have varied radius of the circle along which the driving members are moved whereby the variation in the radius compensates for the variation in the coefficient of friction to thereby transmit a regulated and constant torque.

3,668,895

DEVICE FOR ACTUATING THE NARROWING POINTS OF TWO NEEDLE BED KNITTING MACHINES

Karel Bernard Marie Bruelemans, Gentbrugge, Belgium, assignor to Fabrique National D'Armes De Guerre, Societe Anonyme, Herstallez-Leige, Belgium

Filed Jan. 28, 1970, Ser. No. 6,481
Claims priority, application Belgium, Feb. 7, 1969, 728048
Int. Cl. D04b 7/10
U.S. Cl. 66—70 1 Claim



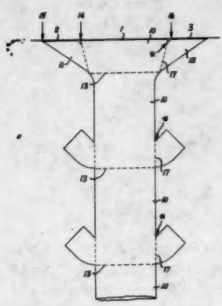
A device for actuating the narrowing points of two needle bed knitting machines, having first means for imparting, to the points, a movement in a direction parallel to the plane of the associated needle bed, second means for varying the distance of said points relative to the said plane and third means for imparting, to the said points an angular shifting about an axis passing through the tip of the latter.

3,668,896

KNITTING OF GARMENTS

Max William Betts, Coventry, and Frank Robinson, Borrowash, both of England, assignors to Courtaulds Limited, London, England

Filed Sept. 25, 1968, Ser. No. 762,416
Claims priority, application Great Britain, Sept. 27, 1967, 43,924/67
Int. Cl. D04b 7/10
U.S. Cl. 66—70 7 Claims



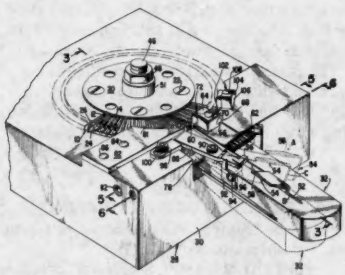
A method of knitting a garment comprising knitting a first portion of the garment in the form of a tube on needles of at least two pairs of opposed beds of a machine, which pairs of beds are laterally movable with respect to one another and can overlap, widening the tubular portion by introducing needles on at least one pair of beds at a point closer to those needles of another bed carrying stitches than the needles of the said one pair of beds already carrying stitches which are most remote from the said needles of the other pair of beds, and further widening the tubular portion by introducing needles in following courses of knitting at points closer to the said needles of the other pair of beds than the needles first introduced, effecting relative lateral movement between the pairs of beds to rearrange the stitches into separate groups, one group on each pair of beds, and knitting separately on to each group of stitches to produce a further tubular portion on each pair of beds.

3,668,897

DEVICE FOR SETTING PIVOTALLY MOUNTED JACKS IN A PATTERN WHEEL

Lester Mishcon, Miami Beach, and Donald W. Reagan, Hialeah, both of Fla., assignors to The Singer Company, New York, N.Y.

Filed Aug. 10, 1970, Ser. No. 62,269
Int. Cl. D04b 37/04
U.S. Cl. 66—1 R 9 Claims



A device is provided for setting pivotally mounted jacks in a pattern wheel. Such device includes a means for rotatably

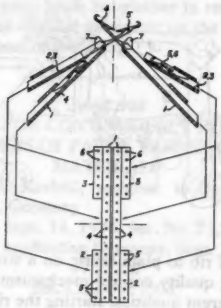
supporting the jack retaining ring of the wheel, mechanism for indexing such ring by rotating the ring to successively align jacks with a selectively operable jack raising lever, and camming means for flipping over raised jacks as the indexing mechanism rotates the jack-supporting ring.

3,668,898

KNITTING METHODS

Max William Betts, Coventry, and Frank Robinson, Borrowash, both of England, assignors to Courtaulds Limited, London, England

Filed Sept. 23, 1968, Ser. No. 761,729
Int. Cl. D04b 7/10
U.S. Cl. 66—70 **7 Claims**



A method of knitting a jersey or similar garment comprises knitting a body portion of said garment in the form of a tube on needles of a first pair of beds of a knitting machine, knitting two separate sleeve portions in the form of tubes, one sleeve portion being knitted on each of two second pairs of beds of the knitting machine which second pair of beds are laterally movable relative to and capable of overlapping the first mentioned pair of beds, arranging the body and sleeve portions adjacent each other, traversing all the needles carrying stitches with a yarn carrier so as to join the body and sleeve portions and, during subsequent knitting, before at least some of the courses, reducing the number of wales in at least one of the portions by transferring stitches of wales of the portion to be reduced, adjacent the other portion to the needles carrying adjacent wales and decreasing the lateral spacing apart of the second beds by a number of needle pitches equal to the number of wales by which the portion has been reduced.

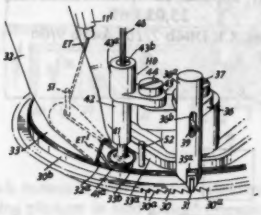
3,668,899

CIRCULAR KNITTING MACHINE

Sidney B. Grewcock; Alan Cooper, both of Burbage; Arthur Amos, Barwell, and Paul Sylvester, Hinckley, all of England, assignors to Barber & Nicholls Limited, Burbage, Near Hinckley, England

Filed July 6, 1970, Ser. No. 52,646
Claims priority, application Great Britain, Dec. 18, 1969, 61,795/69; Apr. 16, 1970, 18,151/70
Int. Cl. D04b 15/61
U.S. Cl. 66—140 S **2 Claims**

A multi-feed circular knitting machine having a yarn changing mechanism at each feed. A guide at one of the feeds is threaded up with an elastomeric thread. Knife elements and a suction tube respectively cut and normally hold any yarn withdrawn from knitting. Adjacent the suction tube, between the latter and the cutting point, is a holder device and a trapper component co-operable to hold the elastomeric thread after it is withdrawn but prior to it being cut. In one form, the holder device consists of a spring-biassed stem



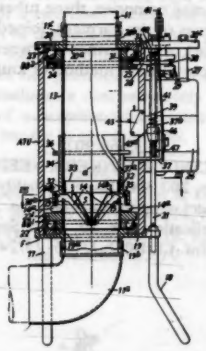
slidable up and down a tubular support and having a thread-engaging foot for co-operation with the trapper component.

3,668,900

TAKE DOWN APPARATUS FOR CIRCULAR SEAMLESS HOSE KNITTING MACHINES

James Peet, Newark, England, assignor to West Bridgford Machine Co. Limited, West Bridgford, Nottingham, England, a part interest

Filed Aug. 6, 1970, Ser. No. 61,591
Int. Cl. D04b 15/92
U.S. Cl. 66—149 S **11 Claims**



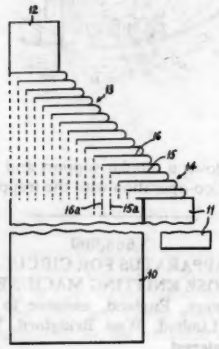
An anti-twist device for preventing twisting of hose as knitted on a circular seamless hose knitting machine of the kind including a stationary take-down tube along which a hose is pulled under suction. The device includes a rotary cylindrical dust shield arranged co-axially with respect to the take-down tube and driven at at least the same rotational speed as that of the needle cylinder of the machine. Fingers, pivotally mounted on the dust shield, are movable about fulcrum points to operative positions in which they interrupt the passage of a knitted hose downwardly through the shield and the take-down tube and to inoperative positions in which they release the pressed-off hose for free passage through the dust shield and the take-down tube. The dust shield is driven from an independent electric motor located exteriorly thereof.

3,668,901

KNITTING METHOD AND KNITTING GARMENT

Max William Betts, Coventry, and Frank Robinson, Borrowash, both of England, assignors to Courtaulds Limited, London, England

Filed May 6, 1970, Ser. No. 35,173
Claims priority, application Great Britain, May 6, 1969, 23,023/69
Int. Cl. D04b 7/10; A41b 9/06
U.S. Cl. 66—176 10 Claims



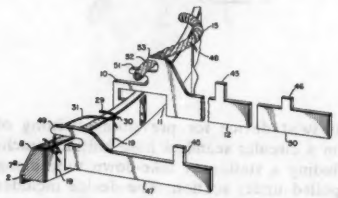
A knitted garment comprises a tubular knitted lower portion and two shoulder portions, each shoulder portion comprising a series of U-shaped courses, each end of each U-shaped course of each shoulder portion being joined to an end of a wale of the tubular lower portion. The tubular lower portion may comprise a single tube constituting the body of the garment, or it may comprise, three tubes, constituting the body and two sleeves of the garment, joined by a single tube constituting the part of the garment between the three tubes and the shoulder portions. A method of knitting the garment is also claimed.

3,668,902

CYLINDER, SINKERS, NEEDLE

Charles J. Sanders, 203 30th Street, Brooklyn, N.Y.

Continuation-in-part of application Ser. No. 347,944, Feb. 27, 1964. This application Apr. 30, 1968, Ser. No. 725,274
Int. Cl. D04b 15/06, 15/24
U.S. Cl. 66—54 30 Claims



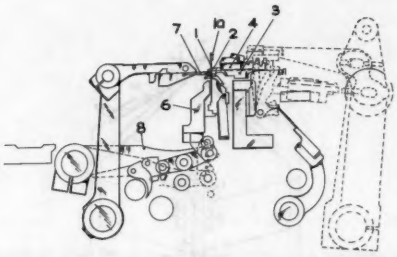
An element affixed to the top of a needle cylinder to cover at least the upper portions of some or all sinker slots and thereby provide the needle cylinder with a smooth upper edge for part or all of the circumference. Sinkers ride in the lower uncovered portions of sinker slots to which an element has been affixed. Sinker portions extend over the upper surface of the element and extend downwardly to engage the lower sinker slot portions from the needle cylinder interior. Alternatively sinkers may ride in the lower portions of covered slots by extending from exterior the needle cylinder directly to the slots. A needle or needles with a large head but narrow shank may be inserted in the needle cylinder at the portion where the element covers sinker slots.

3,668,903

STRAIGHT BAR KNITTING MACHINES

Eric Walter Marriott, Shepshed, England, assignor to William Cotton Limited

Filed Mar. 6, 1970, Ser. No. 17,063
Claims priority, application Great Britain, Mar. 8, 1969, 1,236/69
Int. Cl. D04b 1/00
U.S. Cl. 66—82 8 Claims



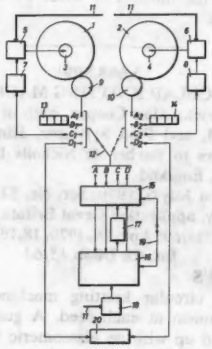
Production of rib to plain fabric on a straight bar knitting machine having quality control mechanism for the fabric to be made at different qualities, starting the rib fabric with first and second yarns by successive motions of the frame needles after pre-setting welt quality control mechanism to an abnormally tight quality and rendering the mechanism effective by pattern control means, and having catch bar cam controlled means operable for abnormally retracting the sinkers and cam shaft shogging means for rendering the cam controlled means effective at required times.

3,668,904

DEVICE FOR AUTOMATICALLY REGULATING THE THREAD CONSUMPTION OF WARPED KNITTING MACHINES

Karel Murenbeeld, 20-Chemin Soujet 1234, Vessy near Geneva, Switzerland

Filed Apr. 8, 1970, Ser. No. 26,496
Int. Cl. D04b 23/00
U.S. Cl. 66—86 A 5 Claims



A device for automatically regulating the thread consumption of warp knitting machines in which plural warp beams

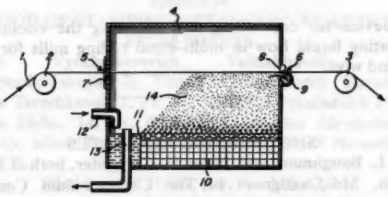
are propelled from a mainshaft by respective variable drives is provided. This device consists of electrical contact means for determining the r.p.m. of the mainshaft, together with a setting device means for fixing the desired speed of thread consumption. A control mechanism is also provided for part of the device which includes electrical impulse generator means on the respective warp beams for indicating thread consumption together with a counter means including subtracting mechanism means for measuring the difference between desired and actual values of thread consumption and having output signal means for adjusting the r.p.m. of individual warp beams through said variable drive. The device further includes switching means for adapting the control mechanism means for successively regulating the r.p.m. of plural warp beams of one or more warp knitting machines through connection with the electrical impulse generator means and the variable drives of the respective warp beams, and means for causing switching of said control mechanism means from one warp beam to another in response to signal from the electrical impulse generator on the warp beam last regulated at the time of switching.

3,668,905

APPARATUS FOR CONTINUOUSLY HUMIDIFYING MOVING WEBS OF PAPER, FABRIC, OR OTHER MATERIALS

Jurgen Schlunke, Krefeld, assignor to Joh. Kleinewefers Sohne, Krefeld, Germany

Filed Sept. 14, 1970, Ser. No. 71,768
Claims priority, application Germany, Sept. 19, 1969, P 19 47 512.8
Int. Cl. D06c *1/08*
U.S. Cl. 68—5 D **5 Claims**



An apparatus for humidifying a moving web of material, especially of paper and fabric, in a continuous manner in which the web to be humidified is passed through housing means and above the humidifying liquid and ultrasonic oscillating means atomizing the liquid.

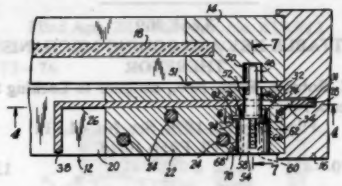
3,668,906

LOCK FOR WINDOWS AND DOORS

David Josephart, Philadelphia, Pa., assignor to Max Harris, Rego Park, N.Y., a part interest

Filed Jan. 25, 1971, Ser. No. 109,103
Int. Cl. E05b *63/14*
U.S. Cl. 70—90 **6 Claims**

A device for securing a pair of slideable window or door sashes in a fixed frame having first and second locking plungers longitudinally displaceable in a housing mounted on a first of said sashes so that said plungers are respectively displaceable into and out of securing relation with said frame and the second of said sashes. The first locking plunger is provided with a keyhole-shaped slot therethrough, while the second locking plunger is positioned to extend through said slot and dimensioned for receipt within the wider portion of said slot but not in the narrow portion thereof at a first locked orientation at which the first locking plunger is retained in securing relation with the frame. Further, the second locking plunger is dimensioned for receipt within the narrower portion of the slot at an opened orientation of said



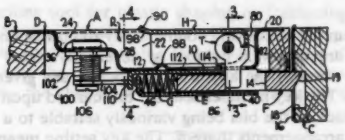
plunger. Lock means is provided for releaseably securing the second locking plunger in said locked orientation.

3,668,907

KEY-CONTROLLED DOOR LOCK

John V. Pastva, Jr., Parma Heights, Ohio, assignor to The Eastern Company, Cleveland, Ohio

Filed Feb. 19, 1971, Ser. No. 116,917
Int. Cl. E05b *5/00*
U.S. Cl. 70—153 **4 Claims**



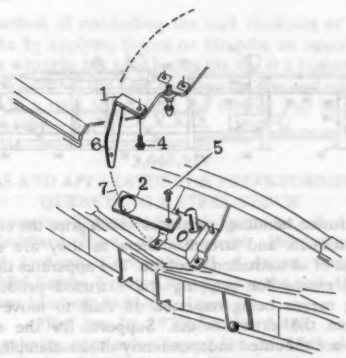
A swinging door, paddle-type, key-controlled flush bolt lock made primarily of metal stampings, having a handle in the deeper part of a two level recess and the key control in the shallower part of the recess at the non-pivoted end of the handle such that the key control is readily accessible to an operative but does not protrude from the front of the lock. The key control includes a cam selectively movable into and out of the path of a member which retracts the bolt upon movement of the handle in one direction.

3,668,908

AUTOMOBILE HOOD LOCK DEVICE

Harold Levy, P.O. Box 205, Cliffside Park, N.J.

Filed Oct. 23, 1970, Ser. No. 83,546
Int. Cl. E05b *65/19*
U.S. Cl. 70—240 **2 Claims**



An automobile hood lock device to keep the hood locked. This consists of an arm fastened to a bolt which is already on

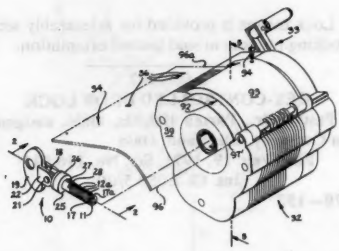
the hood. This arm goes through a plate, with a circular hole, which is fastened to a bolt already on the body of the car. The arm is then secured by a padlock.

3,668,909

SETTABLE KEY AND CODING MECHANISM THEREFOR

Marvin E. Roberts, Reno, Nev., assignor to Locking Systems, Inc., Reno, Nev.

Filed May 28, 1970, Ser. No. 41,211
Int. Cl. E05b *19/18*
U.S. Cl. 70—411 **13 Claims**



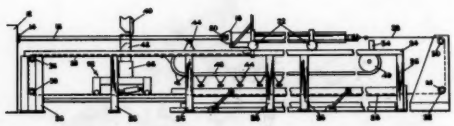
A system for selectively coding a key to correspond to the code for any one of a number of differently coded locks is provided whereby the key is set to operate any given one of the locks. The key includes settable bits carried upon a shank or stem each of the bits being variously settable to a number of coded arrangements thereof. The key setting means serves to set the bits of the key in response to a coding element having predetermined code portions defining the code for the lock which is to be operated. For example a punched hole accounting card can be utilized as a coding element. The setting means receives a key and also the coding element and includes sensing portions for sensing the coded portions of the coding element so as to set the key bits in response thereto.

3,668,910

EXTRUSION HANDLING APPARATUS

Charles B. Gentry; Robert M. Scanlon, both of Grand Rapids; Jerome Rumery, Jenison; Howard L. McDonald, Grand Rapids, and Larry G. Keeler, Hudsonville, all of Mich., assignors to Granco Equipment, Inc., Grand Rapids, Mich.

Filed Oct. 6, 1970, Ser. No. 78,362
Int. Cl. B21j *7/26*; B21c *23/00*
U.S. Cl. 72—24 **15 Claims**



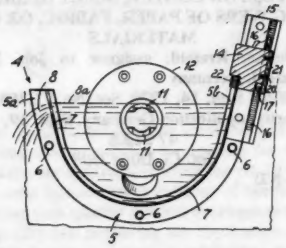
An extrusion handling apparatus which grips the end of extruded products and stretches them as they are extruded from a die of an extrusion machine. The apparatus includes a clamping means for gripping the extruded products, the clamping means being mounted on rails to move linearly away from the extrusion die. Supports for the extruded products are mounted independently of the clamping means and synchronized to move with the clamping means beneath the extruded products and are vertically adjustable with respect to the clamping means to adjust the supports for different size extrusions. The clamping means have opposite jaws which close on the center line of the extruded products. The jaws are moved by a pneumatic, or other, fluid pressure system which is carried by a cart which supports the clamping means. The pneumatic pressure system is recharged by docking with a pressure source at one end of the travel of the clamping jaw cart. A shear press is mounted on a track for movement independent of the clamping means and has power means operably connected thereto for movement of the shear press away from the clamping means after cutting of the extrusion to permit gripping of the cut end of the extrusion without interference from the shear press.

3,668,911

ROLLING MILL

Ilario Properzi, Via Vittor Pisani 8, Milan, Italy

Continuation-in-part of application Ser. No. 706,378, Feb. 19, 1968, now Patent No. 3,552,164. This application May 25, 1970, Ser. No. 56,992
Claims priority, application Italy, May 27, 1969, 17408 A/69
Int. Cl. B21b *45/02*
U.S. Cl. 72—43 **3 Claims**



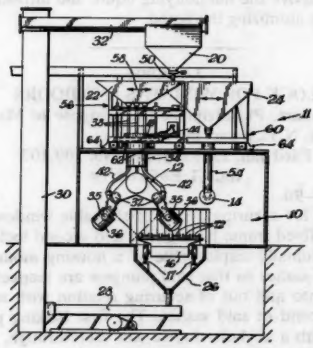
A device for controlling and adjusting the cooling and lubricating liquid flow in multi-stand rolling mills for metal bars and wire.

3,668,912

SHOT PEENING APPARATUS

Davis L. Baughman, and James H. Carpenter, both of Hagerstown, Md., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed July 8, 1970, Ser. No. 53,083
Int. Cl. C21d *7/06*
U.S. Cl. 72—53 **13 Claims**



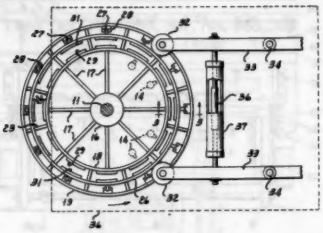
A shot peening apparatus includes a bank of a plurality of commonly mounted centrifugal shot throwing wheels and also includes a free moving centrifugal shot throwing wheel.

3,668,913

APPARATUS FOR SHOT-PEENING TURBINE BLADES

John W. Morris, Huntington Beach, Calif., assignor to Metal Improvement Company, Inc.

Filed Oct. 5, 1970, Ser. No. 77,845
Int. Cl. C21d 7/06
U.S. Cl. 72—53 7 Claims



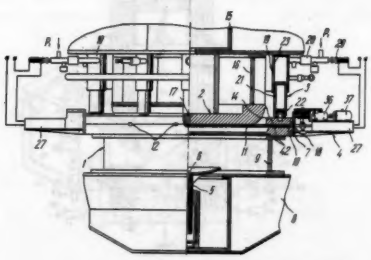
A turntable having a number of pairs of apposed resilient gripping members mounted on nested ring members, one of the rings having its axis eccentrically translatable relative to the other, the translatable ring being pressure-biased in one direction transversely to its axis so that the space between the rings is greater at one end of a diameter to allow loading of workpieces between gripping members, the space closing with rotation of the rings to provide a firm grip of the workpieces passing through a subsequent peening zone, a portion of each workpiece being exposed to peening action and a portion shielded therefrom.

3,668,914

METHOD OF STAMPING METAL CONVEX ARTICLES FROM SHEETS

Bogdan Vyacheslavovich Voitsekhovsky, ulitsa Akademicheskaya, 2; Viktor Alexandrovich Kuvshinov, ulitsa Tereshkovoi, 2, kv. 37; Vladimir Nikolaevich Plaxin, ulitsa Ilicha, 14, kv. 65, and Vyacheslav Alexandrovich Nevsky, ulitsa Tereshkovoi, 4, kv. 60, all of Novosibirsk, U.S.S.R.

Filed Dec. 31, 1969, Ser. No. 889,624
Int. Cl. B21d 24/12, 26/02
U.S. Cl. 72—57 7 Claims



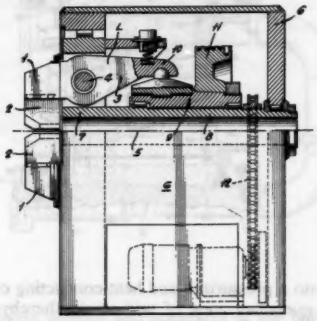
A method and die set for stamping metal blanks into convex articles including positioning a blank between a punch and a ring-shaped die while clamping the edge of the blank, partially deforming the blank with the punch, and then forcing pressurized fluid between the punch and the partially deformed blank to form a convex article, while concurrently effecting controlled inward movement of the edge of the blank so as to control the thickness and quality thereof.

3,668,915

MACHINE TOOL FOR PLASTIC SHAPING OR FASHIONING

Bernd Ribback, Rue de Mertert 48, Wasserbillig, Luxembourg

Filed Apr. 28, 1969, Ser. No. 819,912
Int. Cl. B21j 7/10
U.S. Cl. 72—76 3 Claims



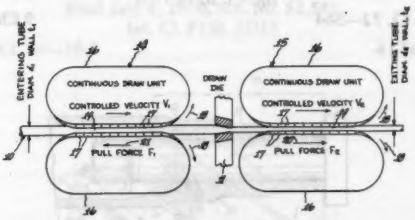
A machine tool for plastic shaping or fashioning by hammering, forging, pressing, etc. in which the shaping is accomplished by means of rocking levers having arms of different lengths, with the tools for effecting the working strokes being carried by the shorter arms and being driven by the longer arms.

3,668,916

DRAWING OF METAL TUBING

Harry C. Ledebur, Cranfield, Ohio, assignor to Wean Industries, Inc.

Filed Jan. 19, 1970, Ser. No. 3,979
Int. Cl. B21c 1/00
U.S. Cl. 72—274 2 Claims



The method of controlling the wall thickness of a drawn metal tube by applying forces on the tube on opposite sides of the die whereby the tube leaves the die at a higher velocity than the velocity of the tube entering the die, and relating the velocities in a ratio to produce the desired wall thickness of the drawn tube.

3,668,917

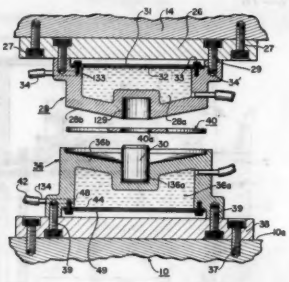
PROCESS AND APPARATUS FOR PRESS-FORMING AND QUENCHING A STEEL STOCK

Noboru Komatsu; Takatoshi Suzuki; Takuo Ito, all of Nagoya-shi; Yoshiteru Hara, Chiryu-machi, Hekikai-gun, and Kouichi Asakura, Kariya-shi, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo-Kenkyusho and Aisin Seiki Company Limited, Aichi-ken, Japan

Filed Jan. 26, 1970, Ser. No. 5,450
Claims priority, application Japan, Jan. 25, 1969, 44/6129
Int. Cl. B21d 11/10; B21k 29/00
U.S. Cl. 72—342 8 Claims

The invention relates to a process and apparatus for press-forming and quenching a steel stock such as diaphragm

spring for automotive clutch use. In the invention, the stock is preparatorily heated to its austenitizing temperature such as about 800° C., or so, placed on one of two cooperating die elements, and then squeezed therebetween under pressure, said die elements having working surfaces having corresponding dimensions and configurations so as to be



brought into a pressurized and heat-conducting contact with the to-be-quenched zone of said stock, thereby said stock being press-formed to its desired shape and wholly or locally quenched to a desired hardness such as H_RC 60° by conducting substantial amount of heat from the stock to the die elements.

3,668,918

METHOD FOR MANUFACTURING SHAFTS FOR VEHICLES

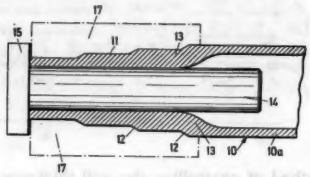
Helmut Benteler, Bielefeld; Franz-Josef Hartmann, Paderborn, and Heinz Hefendehl, Schloss Neuhaus, all of Germany, assignors to Benteler-Werke Aktiengesellschaft, Kreis Paderborn, Germany

Filed Oct. 2, 1969, Ser. No. 863,149

Claims priority, application Germany, Oct. 23, 1968, P 18 04 673.6

Int. Cl. B21k *1/10*

U.S. Cl. 72—364 **9 Claims**



A shaft for automotive vehicles or the like, formed as a tube tapered at both ends, wherein the tube wall is peripherally thickened at one or more points extending beyond the reinforcement obtained by the tapering.

3,668,919

COMBINATION HYDRAULIC SHEARING AND PRESSBRAKE MACHINE

Toshio Hongo, 7-11, 5-chome Konodai, Ichikawa, Japan

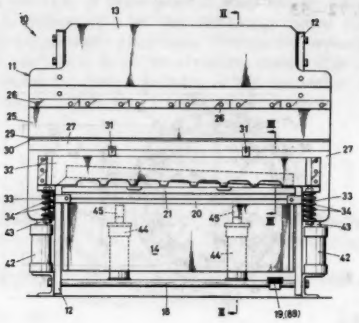
Filed Sept. 11, 1970, Ser. No. 71,451

Claims priority, application Japan, Sept. 12, 1969, 44/72388

Int. Cl. B21j *9/02*

U.S. Cl. 72—453 **5 Claims**

A combination hydraulic shearing and pressbrake machine is disclosed which includes auxiliary hydraulic cylinders in addition to main cylinders to actuate the ram. The auxiliary cylinders are held at rest during the shearing mode of operation but actuated together with the main cylinders during the pressbrake operation, in which the auxiliary cylinders serve particularly to support and maintain maximum parallelism of the ram. A control device is also disclosed which switches the



operation of the auxiliary cylinders relative to the main cylinders and which further regulates the upper and lower limit positions of the reciprocating ram.

3,668,920

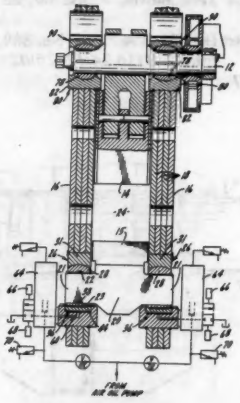
HYDRAULIC CONTROL SYSTEM FOR A METAL FORMING PRESS

Eugene E. Grankowski, and Lambros A. Pappas, both of Chicago, Ill., assignors to Wyman-Gordon Company, Worchester, Mass.

Filed July 16, 1970, Ser. No. 55,467

Int. Cl. B21j *9/02*

U.S. Cl. 72—455 **16 Claims**



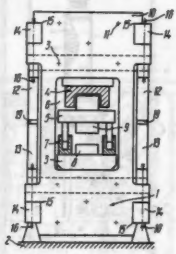
There is disclosed a hydraulic control system for use in combination with a metal forming press. The hydraulic control system is adapted to exert a pressure on the frame, the bed and the crankshaft of the metal forming press which is sufficient to carry the tonnage of the press during normal operation and which is sufficient to secure the bed and the crankshaft to the frame.

3,668,921

STIRRUP FRAME FOR HYDRAULIC PRESS

Moisei Izrailevich Budman, ulitsa Katernicha, 3, kv. 37; Frederik Isaakovich Kaganovsky, ulitsa Shkadinova, 59, kv. 76; Nikolai Ivanovich Kapitanov, ulitsa Shkadinova, 42, kv. 76; Jury Nikolaevich Karzov, ulitsa Shkadinova, 59, kv. 85; Andrei Fedorovich Nadtochenko, ulitsa Marata, 5, kv. 3; Eduard Sebostyanovich Slavetsky-Kovitsky, Oktyabrssky poselok, Shlakobetonny dom 7, kv. 2, and Leonid Pavlovich Shorokhov, ulitsa Sotsialisticheskaya, 69, kv. 65, all of Kramatorsk, U.S.S.R.

Filed Oct. 10, 1969, Ser. No. 865,309
Int. Cl. B21j *13/04*
U.S. Cl. 72—455 7 Claims



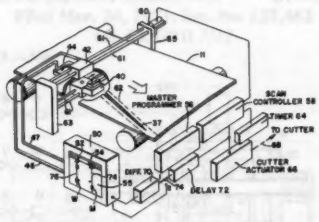
A hydraulic press comprises a stirrup frame with a fixed cross-head and a movable cross-head, the frame having bearing plates connected to one another. Two pairs of side plates fasten the bearing plates together at the sides thereof, with provision for linear displacement for the side plates in the direction of the press operating force and optionally for relative rotation in their own plane.

3,668,922

WEB SAMPLING METHOD AND APPARATUS

John W. Fleming, Jr., and James Michael McMullen, both of Columbus, Ohio, assignors to Industrial Nucleonics Corporation

Continuation of application Ser. No. 601,750, Dec. 14, 1966, now abandoned. This application Aug. 13, 1970, Ser. No. 63,597
Int. Cl. B26d *1/02*; G01c *25/00*
U.S. Cl. 73—1 37 Claims



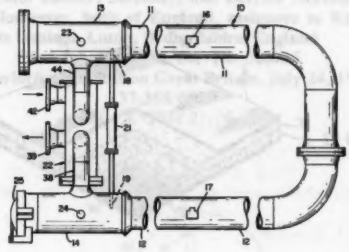
A cutter for removing samples from a moving web comprises a knife having a pair of cutting edges that are selectively urged into contact with the web being cut. In one embodiment, the blades are crossed relative to each other while in a second embodiment the tips of the two blades have a common apex. The blades may be positioned so that they slope with or against the web being cut. The sample has an area coincident with an area monitored by a gauge to enable the gauge calibration to be determined.

3,668,923

METER PROVING METHOD AND APPARATUS

Marvin H. Grove, and Lyle R. Van Arsdale, both of Houston, Tex., assignors to M & J Valve Company, Houston, Tex.

Filed June 19, 1970, Ser. No. 47,760
Int. Cl. G01f *25/00*
U.S. Cl. 73—3 10 Claims



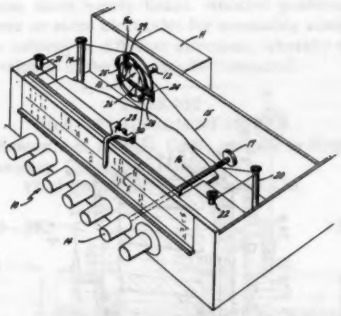
Meter proving method and apparatus of the bidirectional type for calibrating liquid flow devices. It employs a four-way diverter valve of the gate type which is connected to the ends of the metering loop and which directs the flow in one direction or the other through the loop. The diverter valve is power operated and capable of rapid movement between operating positions. A leak detecting means is incorporated with the diverter valve and is used to indicate leakage past the sealing assemblies which would interfere with the accuracy of a metering run. Means including an electronic system serves to provide an automated cycle of operation.

3,668,924

TUNER DRIVE APPARATUS

Alfred A. Cote, Langhorne, Pa., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed July 6, 1970, Ser. No. 52,581
Int. Cl. F16h *35/18*
U.S. Cl. 74—10.7 4 Claims



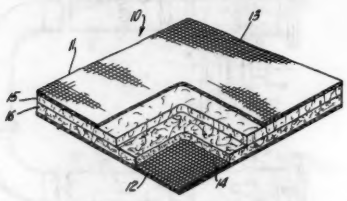
In a tuner cord drive, a tuner drive pulley of relatively small diameter includes a radially extending arm, the outer portion of which protrudes from the rim of the pulley and anchors one end of an extended coil spring. The drive cord is wrapped about the pulley and includes a portion that extends radially inwardly through a peripheral slot in the pulley. The other, or free, end of the extended spring is affixed to the mentioned cord portion, thereby introducing tension in the drive cord.

3,668,925

METHOD FOR DETECTION OF ABNORMAL MILK

Frederick K. Mesek, Downers Grove, Ill., assignor to Johnson & Johnson

Original application May 22, 1967, Ser. No. 640,021. Divided and this application Apr. 20, 1970, Ser. No. 38,622
Int. Cl. G01n *33/04*
U.S. Cl. 73—61 R 1 Claim



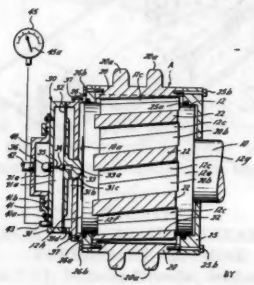
There is disclosed the method of filtering milk and detecting the existence of leukocytes in the milk, incidental to the filtration. This is accomplished by passing the milk through a filter element having a coarse, first fibrous filter zone which filters out gross impurities present in the milk and immediately thereafter passing the milk through a finer, following second fibrous filter zone of higher density than the first filter zone, and separating the filter element along an interface between the two zones and examining the inlet surface of the second filter zone to detect discoloration which is indicative of mastitis in the cows from which the milk is obtained.

3,668,926

APPARATUS FOR INDICATING TORQUE APPLIED TO PIPE ROTATED BY A ROTARY TABLE

Leo A. Bell, Villa Maud, Kappara Road, San Gwann, Malta

Filed Sept. 9, 1970, Ser. No. 70,660
Int. Cl. G01l *3/14*
U.S. Cl. 73—136 R 9 Claims



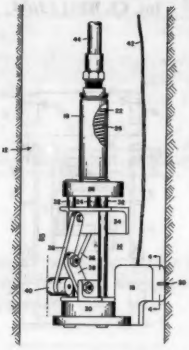
Apparatus for indicating the torque applied to a rotated member, particularly pipe rotated by a rotary table in the drilling of a well, wherein the apparatus is connected to the drive shaft of the rotary table, and power to the rotary table is supplied through the apparatus.

3,668,927

BOREHOLE THERMAL CONDUCTIVITY MEASUREMENTS

Eddie P. Howell, Plano; Carl A. Youngman, Dallas; Jack E. Hardison, Garland, all of Tex., and Robert E. Tribble, Princeton, N.J., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Oct. 16, 1970, Ser. No. 81,224
Int. Cl. E21b *47/06*
U.S. Cl. 73—154 4 Claims



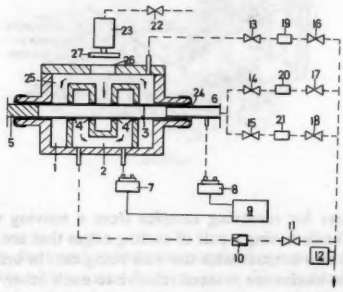
A system for making thermal conductivity measurements in dry boreholes. A probe having a temperature sensor, a heater, and expander means is inserted into a borehole. The expander means is actuated so that the temperature sensor contacts the sidewall. The heater then heats the sensor and temperature measurements are made at predetermined intervals to obtain a heating curve. The slope of the plot for temperature versus logarithmic time is linear and proportional to the conductivity.

3,668,928

NON-DESTRUCTIVE HARDNESS, TESTING OF ARTICLES SUCH AS CIGARETTES

Mauritz Leon Strydom, Stellenbosch, South Africa, assignor to Tobacco Research and Development Institute Limited

Filed May 14, 1970, Ser. No. 37,272
Claims priority, application South Africa, Oct. 15, 1969, 60/7259; May 16, 1969, 69/3457
Int. Cl. G01n *3/10;* G01b *13/08*
U.S. Cl. 73—78 6 Claims



A cigarette is tested for hardness by inserting it into a rubber sleeve which is surrounded by rings. Air is passed

through the annuli formed between the cigarette and the rings. The pressure drop is measured firstly with the cigarette interior as is, secondly with the cigarette interior subjection to a first suction and thirdly with the interior subjected to a second suction. The pressure drops are measures of the diameters of the cigarette at the various interior loadings. From these diameters and the loadings the hardness of the cigarettes may be computed.

3,668,929

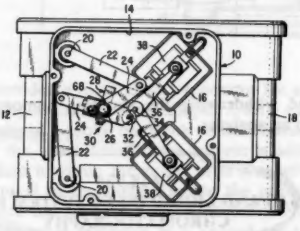
METER TANGENTS

Donald C. Ruddy, Willow Grove, Pa., assignor to The Singer Company, New York, N.Y.

Filed Sept. 8, 1970, Ser. No. 70,280

Int. Cl. G01f 3/22

U.S. Cl. 73—281 **4 Claims**



A tangent for a meter having a plurality of tangent members locked in adjusted position by a releasable locking means so that during normal operation the adjustment components thereof are not subject to strain, wear, or the action of the operational working forces. Upon release of the locking means the tangent can be adjusted for stroke and timing in the respective longitudinal and transverse directions by rotation of separate adjusting screws. Each of the adjusting screws is held captive in one of the adjacent tangent members and engages a threaded portion in the other of the adjacent tangent members, whereby rotation of said screw causes relative motion between the tangent members to move the same toward or away from each other.

3,668,930

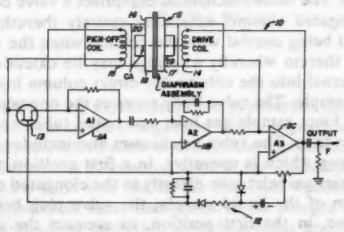
PARAMETER READ-OUT SYSTEMS FOR PRESSURE-FREQUENCY TRANSDUCERS

George M. Strauss, Elmhurst, N.Y., assignor to Kollsman Instrument Corporation, Syosset, N.Y.

Filed Mar. 24, 1971, Ser. No. 127,462

Int. Cl. G01l 7/12

U.S. Cl. 73—386 **20 Claims**



Read-out systems which respond to an input signal having a frequency value that is variable with pressure to provide read-out of parameters having a non-linear relationship to the frequency of the input signal employ digital circuits operable to generate pulse count proportional to the logarithm of the period of the transducer frequency. Depending upon the specific parameter to be read-out, appropriate modifying circuitry modifies the count, with or without memory units, to develop an output read-out signal.

3,668,931

MEASURING THE VELOCITY OF FLOW OF AN ELECTRICALLY CONDUCTIVE FLUID

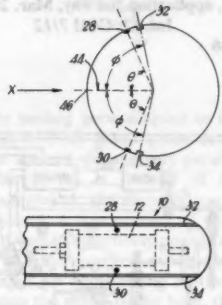
Klaus Joachim Zanker, Streatley, and Derrick Norman Harrison, Gloucester, both of England, assignors to Kent Instruments Limited, Luton, Bedfordshire, England

Filed July 20, 1970, Ser. No. 56,605

Claims priority, application Great Britain, July 24, 1969, 37,358/69

Int. Cl. G01c 21/10

U.S. Cl. 73—181 **13 Claims**



An electromagnetic velocity meter is described, of the type in which an electric signal is generated in response to relative motion between the velocity meter and a conductive fluid in a magnetic field generated by means in the velocity meter, to provide a measure of the velocity of the relative motion. The velocity meter is particularly useful as a ship's log, and may be arranged to be retractably mounted in a ship's hull. A preferred form of the velocity meter is circular in cross section and has a pair of electrodes for sensing the electric signal, the electrodes being disposed on the flow meter in a manner tending to minimize misalignment error. It also has boundary layer trips to make the signal generated/velocity characteristic more nearly linear. Another preferred form mounts three or more electrodes for measuring components of the flow velocity in different directions, whereby the drift angle and velocity of the ship may be computed.

3,668,932

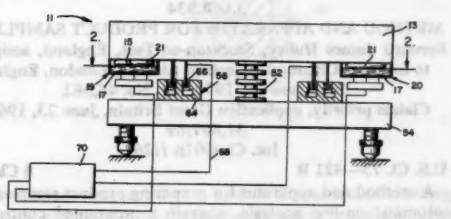
GRAVITY GRADIENT METER

Siegfried Hansen, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 4, 1970, Ser. No. 95,230

Int. Cl. G01v 7/00

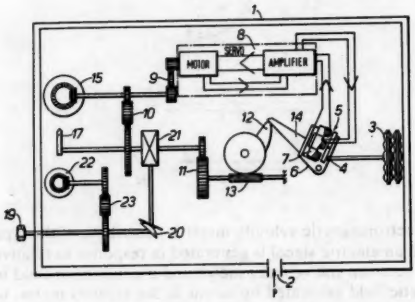
U.S. Cl. 73—382 **12 Claims**



A resilient member is provided with first and second local gravity vector determining devices secured thereto and

spaced thereon. Force means is attached to the bar to bend it. The output of the local gravity vector determining devices is connected to the force means so that the resilient member is bent so that each of the gravity vector determining devices is oriented so that the local gravity vector is parallel to its reference axis. The local gravity vector determining device is a bubble level operating under a flat surface, with electrodes determining bubble position. Four force motors positioned around a stiff central spring deflect the member.

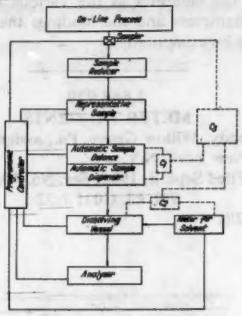
3,668,933
AIRCRAFT INSTRUMENTS
Blom-Bakke, Pernilles vei 7, Oslo 7, Norway
Filed Mar. 30, 1970, Ser. No. 23,945
Claims priority, application Norway, Mar. 29, 1969, 1327/69
Int. Cl. G01l 7/12
U.S. Cl. 73—386 **9 Claims**



An aircraft height-indicator shows height in pressure-based units that correspond to intervals of vertical distance which increases in magnitude as height increases and which define economically separated flight levels. Height, and flight level, according to these units is indicated digitally, intermediate values being shown in analog by a pointer against an equally divided scale. The digital and analog indications are taken from the rotational position of a cam which is driven to counteract displacement of manometric capsules sensitive to static pressure P, and which is profiled to provide rotation dependent on P^n where n lies between 0.4 and 0.8.

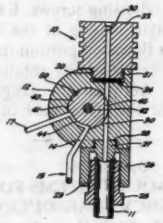
3,668,934
METHOD AND APPARATUS FOR PRODUCT SAMPLING
Bernard James Hulley, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England
Filed June 11, 1970, Ser. No. 45,382
Claims priority, application Great Britain, June 23, 1969, 31,607/69
Int. Cl. G01n 1/28
U.S. Cl. 73—421 R **6 Claims**

A method and apparatus for preparing product samples for automatic on-line analysis, wherein a programed controller causes a series of steps to be carried out in sequence, each for a preselected time, said steps including withdrawing a sample from the process, accurately weighing a preselected quantity thereof, discharging the weighed sample to a mixer, accurately measuring and metering a preselected quantity of liquid to the mixer, mixing the weighed sample and measured



liquid, and withdrawing the resulting homogeneous liquid mixture to an analyzer.

3,668,935
GAS AND LIQUID INLET SYSTEM FOR CHROMATOGRAPHY
Norman C. Coelho, Diamond Bar, and Brian Thompson, Placentia, both of Calif., assignors to Beckman Instruments, Inc.
Filed Apr. 2, 1970, Ser. No. 25,020
Int. Cl. G01n 1/22
U.S. Cl. 73—422 GC **8 Claims**



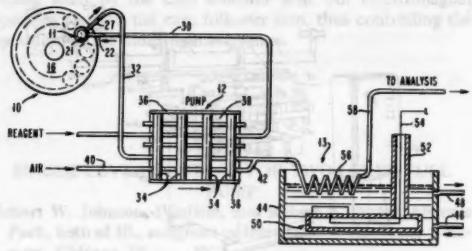
A valve mechanism which is adapted to be connected directly to the inlet of a gas chromatographic column for selectively directing either a gas or a liquid sample into the column. The valve mechanism comprises a valve body having an elongated channel extending entirely therethrough, the channel being coaxial with the column when the valve is attached thereto whereby a syringe may be extended through the channel into the column for direct column injection of a liquid sample. The valve body receives the opposite ends of a sample loop, sample gas inlet and outlet tubes and a carrier gas inlet tube. The valve mechanism also includes a rotatable valve plug which is operative, in a first position, to connect the carrier gas inlet tube directly to the elongated channel for injection of the liquid sample; the valve plug being further operative, in the first position, to connect the sample gas inlet and outlet tubes to the ends of the sample loop so that the loop is filled with the sample gas. Upon rotation to a second position, the valve plug is operative to connect the carrier gas inlet tube to the elongated channel via the sample loop whereby the carrier gas flushes the sample gas trapped in the sample loop into the column.

3,668,936

METHOD AND APPARATUS FOR SAMPLING

Rand E. Herron, Stamford, Conn., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Dec. 15, 1970, Ser. No. 98,365
Int. Cl. G01h *1/14*
U.S. Cl. 73—423 A 3 Claims



There is provided a method and apparatus for sampling a viscous liquid by aspiration of such liquid from a container in an off-take tube of a probe insertable in the container. A reagent having the characteristic of a solvent is added to the sample to dilute it within the probe after a relatively short distance of travel of the sample within the probe. The reagent is fed into the probe at a first predetermined flow rate and the admixture is aspirated at a second predetermined flow rate which is faster so that the sample is aspirated at a rate determined by the difference between the first and second flow rates.

ERRATUM

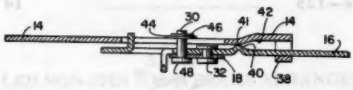
For Class 74—10 see:
Patent No. 3,668,924

3,668,937

KEY SLIDE LOCKING MECHANISM

Donald V. O'Neal, River Grove, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 31, 1971, Ser. No. 129,882
Int. Cl. F16h *35/18*
U.S. Cl. 74—10.33 5 Claims



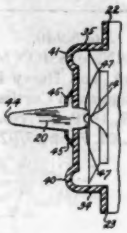
A key slide locking mechanism for a pushbutton tuner having a boss located on the plunger rod which engages an interface of the pushbutton slide in the locked condition, and is disengaged from the pushbutton slide in the unlocked condition. With the slide and rod in the unlocked condition the rotatable presettable tuner cam joined to the plunger rod can rotate through an arc limited by an indexing slot and pressure pin in the cam. In the locked or contracted position the boss on the plunger rod engages the interface of the pushbutton slide biasing the rod and slide apart and causing the pressure pin indexed through the cam, plunger rod and pushbutton slide and secured by a "C" washer to clamp the cam to the plunger rod.

3,668,938

HERMETICALLY SEALING BOOT WITH ACTUATOR FOR THUMB WHEEL TYPE SWITCHES

Edward A. Dimitry, Hillsdale, N.J., assignor to APM Corporation, Englewood, N.J.

Filed Mar. 1, 1971, Ser. No. 122,584
Int. Cl. F16j *15/50*
U.S. Cl. 74—18.1 3 Claims



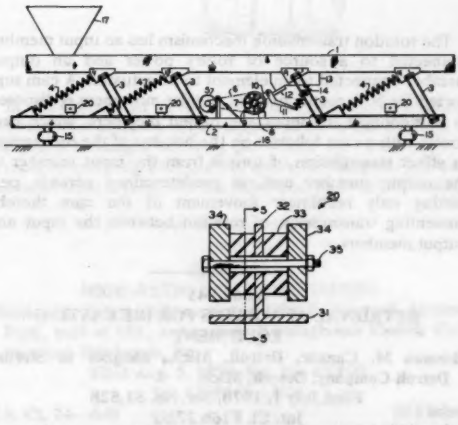
An hermetically sealing boot adapted to fit the face of a housing having one or more thumb wheel actuators arranged for rotation about an axis substantially parallel to the plane of said face. The device is formed of molded flexible synthetic resinous material, and includes one or more insert-molded rigid actuators, a first portion of which projects inwardly of a sealing wall to selectively engage an actuator, and a second portion of which projects outwardly of said wall to be manually engaged for transmitting motion to said actuator. Depending upon the shape of the boot, the actuator may be of a pivoting, translationally-moving or nutating type.

3,668,939

PLANE OMNIDIRECTIONAL ABSORBER

Preston H. Schrader, Middletown, Ky., assignor to Rex Chainbelt Inc., Milwaukee, Wis.

Filed Nov. 13, 1969, Ser. No. 876,457
Int. Cl. F16h *33/00*
U.S. Cl. 74—61 10 Claims



A vibratory counterforce system for counterbalancing vibratory forces of constant frequency acting in a plane comprises at least one planar omnidirectional dynamic absorber, i.e. an auxiliary mass vibratory system, the natural frequency of which is substantially independent of the direction of vibration in the plane. When used in sets of two or more, and

located at spaced apart points on a structure subject to vibratory forces of constant frequency, the absorbers act to minimize the vibration at their points of attachment and respond, both to translatory forces and to force couples. The absorbers or counterforce units are particularly useful when applied to the base of a vibratory conveyor because they can effectively counterbalance the vibratory forces applied to the base which vary both in amplitude and direction according to the load on the conveyor.

3,668,940

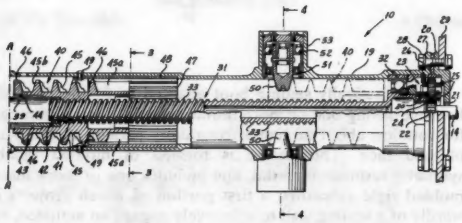
ROTATION TRANSMISSION MECHANISM

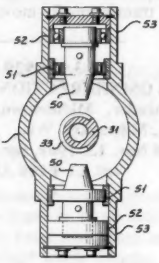
Salvatore Avena, Newark, and Harry L. Richardson, River Edge, both of N.J., assignors to Curtiss-Wright Corporation

Filed July 9, 1970, Ser. No. 53,436

Int. Cl. F16h *27/02*

U.S. Cl. 74—89.15 **12 Claims**





The rotation transmission mechanism has an input member connected to a source of rotary power and an output member connected to an element to be actuated. A cam supported for both rectilinear and angular movement is disposed to interconnect the input and output members, which cam coacts with a cam follower on the housing of the mechanism to effect transmission of torque from the input member to the output member and, at predetermined periods, permitting only rectilinear movement of the cam thereby preventing transmission of rotation between the input and output members.

3,668,941

RETRIEVAL APPARATUS FOR DIE CASTING EQUIPMENT

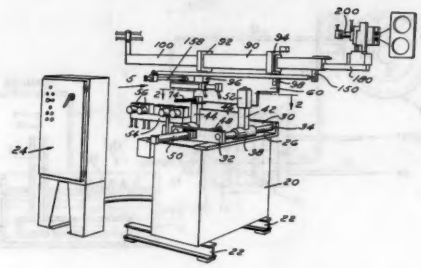
Herman M. Canner, Detroit, Mich., assignor to Sterling Detroit Company, Detroit, Mich.

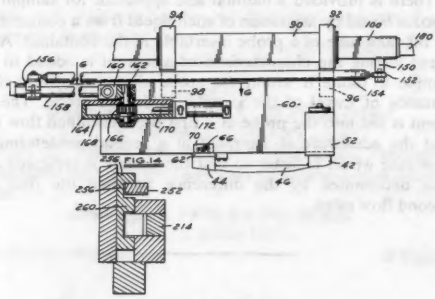
Filed July 1, 1970, Ser. No. 51,528

Int. Cl. F16h *27/02*

U.S. Cl. 74—89.17 **5 Claims**

A retrieval apparatus for die casting equipment which includes an extension tube for reaching into a die casting machine carrying an extension bar for increasing the range of the reach, there being pick-up jaws on the extension bar for clamping an ejected casting and returning it to a drop position over a quench tank, the jaws being movable to change the position of the casting so that it will orient properly with the quench tank and thus reduce the spacing required for the assembly. A mechanism for actuating the jaws from a release position to a pick-up position and again back to a release





position together with a locking means for the jaws is incorporated to operate automatically during the extension and retraction motion of the slide tube and slide bar, and safety release mounting means are provided for the assembly to avoid damage due to possible malfunction.

3,668,942

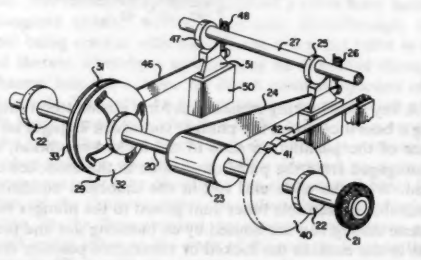
INDEXING MECHANISM

Donald E. Landis, and Mohanjit S. Sidhu, both of Cambridge, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed June 5, 1970, Ser. No. 43,815

Int. Cl. F16h *29/00;* **B65h** *17/22*

U.S. Cl. 74—125 **14 Claims**



A high-speed indexing mechanism, for moving a member to a printing position, which includes an indexing shaft on which are mounted an indexing drive wheel and a clutch member operated by a cam follower arm. A cam member

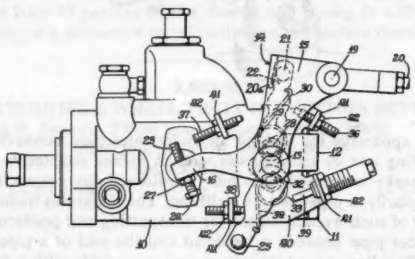
rotates the cam follower arm to drive the indexing shaft, which moves the member to a printing position by means of the indexing drive wheel. The clutch allows the indexing shaft to be rotated in one direction by the cam follower arm. A second clutch member is mounted on the indexing shaft to provide a drag on the indexing shaft. To provide a more accurate indexing mechanism, a ratchet wheel is mounted on the indexing shaft to control the length of rotation of the indexing shaft by the cam follower arm. An electromagnet operates to latch the cam follower arm, thus controlling the operation of the indexing mechanism.

3,668,943

SINGLE LEVER CONTROL FOR TWO LEVER FUEL PUMP

Robert W. Johnson, Winfield, and Robert B. Porter, Melrose Park, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Aug. 10, 1970, Ser. No. 62,470
Int. Cl. G05g *9/02*
U.S. Cl. 74—471 R **11 Claims**



A bellcrank lever for moving a speed-control lever and an engine-start lever. The bellcrank lever with the help of springs moves in a first portion of angular movement, the speed-control lever from high idling speed to low idling speed, and in a second portion of angular movement angularly spaced from the first portion, the engine-start lever from the position for running speed successively through a position for operating at excess fuel to a final position for stopping the engine. The speed-control and engine-start levers extend generally in opposite directions from their pivots, which are adjacent the pivot for the bellcrank lever.

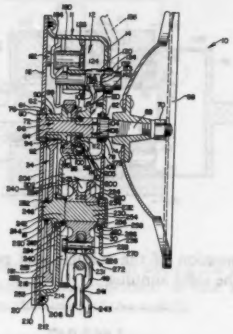
3,668,944

SEALED NON-SPIN HAND BRAKE ARRANGEMENT

Eldred H. Natschke, Bourbonnias, Ill., assignor to Universal Railway Devices Company

Filed July 29, 1970, Ser. No. 59,194
Int. Cl. G05g *1/08*
U.S. Cl. 74—505 **4 Claims**

A hand brake of the non-spin type for railroad cars including a front casing and rear attachment plate that define a housing space for the brake operating shaft, ratchet wheel, ratchet wheel clutch, brake release mechanism, and drum gear, that is sealed from the elements by a seal applied between the two. The front casing is indented to define a mounting space for a single wind type brake drum, which is keyed to a mounting shaft that is journaled between the casing and a brake drum cover plate that may be secured to the casing in various positions relative thereto depending on the particular hand brake application desired. The drum extends into the housing space where it has fixed to same the drum gear and the drum carries a headed pin that anchors the



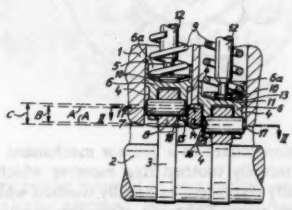
brake chain to the drum, with the pin head cooperating with a stop block fixed to the casing to form a chain stop.

3,668,945

ROLLER TAPPET GUARD

Eberhard Hofmann, Neuhof, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 13, 1970, Ser. No. 19,165
Claims priority, application Germany, Mar. 18, 1969, P 19 13 519.4
Int. Cl. F16h *53/06*
U.S. Cl. 74—569 **2 Claims**



In a multicylinder device, such as a fuel injection pump, between two adjacent roller tappets there is fixedly held in the pump housing a securing pin which, by virtue of parts thereof cooperating with parts of said roller tappets, prevents the latter from turning and the roller pins from axially sliding.

3,668,946

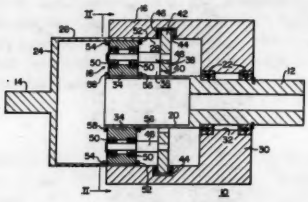
HIGH-RATIO DRIVE MECHANISM

Thomas M. Fahey, Baltimore, and John C. Mentzell, Severna Park, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 5, 1970, Ser. No. 61,109
Int. Cl. F16h *13/06*
U.S. Cl. 74—640 **10 Claims**

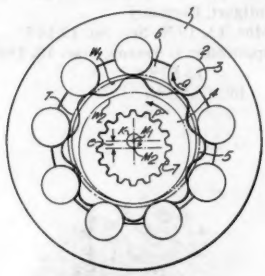
A rotary power transmission having a drive shaft and a driven shaft in parallel or coaxial alignment, a rigid annulus fixedly mounted around the drive shaft, the driven shaft having a flexible tubular end portion disposed between the drive shaft and the rigid annulus, and means including rollers between the drive shaft and flexible tubular end portion for

transferring torque from the drive shaft to the flexible tubular end portion by frictional circumferential engagement and



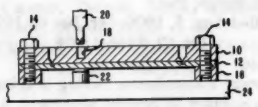
radial compression of the tubular end portion between the rollers and the rigid annulus.

3,668,947
GEARWHEEL MACHINE
Jorgen Frederik Waldorff, Rodovre, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Filed Oct. 2, 1970, Ser. No. 77,542
Claims priority, application Germany, Oct. 10, 1969, P 19 51 100.3
Int. Cl. F16h *1/28*
U.S. Cl. 74—804 **2 Claims**



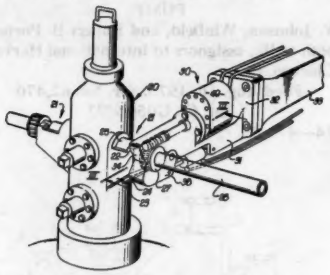
The invention relates to a gerotor mechanism of the type having an internally toothed ring member which surrounds an eccentrically displaced, externally toothed wheel member having one less teeth. The teeth of the ring member have the form of rollers which is old but the pitch circle of the ring member has a particular diameter relative to a circle which is tangent to the rollers so that in operation the rollers are caused to rotate continuously in one direction only.

3,668,948
METHOD
Taylor Franklin Lavinder, Bassett, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Mar. 16, 1971, Ser. No. 124,700
Int. Cl. B21k *5/20*
U.S. Cl. 76—107 S **2 Claims**



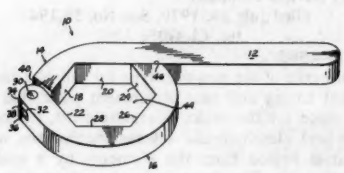
A spinneret fabrication process that includes the steps of forming a countersink in the bottom of previously formed counterbores of a spinneret plate then punching through the countersinks to form capillaries is improved by supporting the immediate area of each counterbore with a flat-head pin anvil during the forming and punching steps.

3,668,949
POWER WRENCH FOR MAKING UNDERWATER PIPE CONNECTIONS
Raymond W. Walker, Huntington Beach, Calif., assignor to Deep Oil Technology, Inc., Long Beach, Calif.
Original application Nov. 26, 1968, Ser. No. 779,004, now Patent No. 3,593,408. Divided and this application Dec. 17, 1970, Ser. No. 99,031
Int. Cl. B25b *17/00*
U.S. Cl. 81—57.13 **8 Claims**



An apparatus for making an underwater pipe connection including one or more power wrench means adapted to be universally or multidirectionally positioned for connecting, exemplarily, a pipeline to a wellhead. The apparatus includes a pair of such wrench means for transporting and positioning a spacer pipe between a wellhead and the end of a pipe or fluid flow line spaced therefrom and cooperable with rotatable coupling means carried on opposite ends of such a spacer pipe and cooperable with a fixed connector fitting on such a wellhead and on the end of the pipe flow line. Specifically, a power wrench for use with a connector means including a rotatable externally gear toothed collar such as may be used in the oil drilling industry for connecting or coupling a pipe to a connector fitting wellhead. The power wrench has a movable pivotal jaw-like member cooperable with a rotatably mounted worm gear for holding and positioning the worm gear in driving engagement with the collar.

3,668,950
SLIP JOINT NUT WRENCH
Virgil E. Tyler, 7210 N.W. 45, Bethany, Okla.
Filed Mar. 4, 1971, Ser. No. 120,955
Int. Cl. B25b *13/28*
U.S. Cl. 81—98 **2 Claims**



A slip joint wrench comprising a handle, having a fixed jaw formed on one end thereof, forming flat surfaces engaging flats of a nut to be turned. A movable jaw is pivotally connected to the fixed jaw. The movable jaw has a generally

concave surface forming a nut surrounding socket with the fixed jaw when the movable jaw is pivoted toward the handle.

3,668,951

FORCE-APPLYING TOOLS

Charles Robert Talmage, New Canaan, Conn., assignor to New Britain Machinery Company, New Britain, Conn.

Original application May 10, 1967, Ser. No. 637,391, now Patent No. 3,506,500, dated Apr. 14, 1970. Divided and this application Oct. 27, 1969, Ser. No. 871,337

Int. Cl. B25b *13/06, 7/02;* **B22f** *5/00*

U.S. Cl. 81—121 R **10 Claims**

Force-applying hand tools, such as wrench sockets, are disclosed produced by powder metallurgy. The working portion of the tool comprises a porous sintered body of heat treatable steel composition of high strength having an average density of at least 85 percent of true density and having an adherent plating of a protective metal coating on the surface thereof.

3,668,952

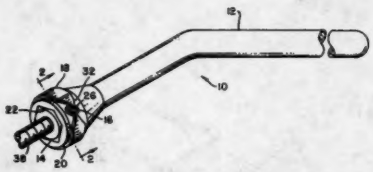
AUTOMOBILE WHEEL THEFT PREVENTION DEVICE

John H. Teutsch, 29590 Hoover Road, Warren, Mich.

Filed Jan. 26, 1970, Ser. No. 5,773

Int. Cl. B25b *13/02*

U.S. Cl. 81—125 **12 Claims**



An automobile wheel theft prevention device consisting of an automobile lug wrench having an arcuate spring therearound, a spring biased radially movable stud therethrough and a round lug with a radial opening therein. The round lug cannot be removed by means of the usual lug wrench. To remove a wheel having the round lug thereon, the radially movable stud on the lug wrench must be engaged in the opening in the round lug. With the wrench thus locked onto the round lug, the lug may be removed in the usual manner.

3,668,953

STOP MECHANISMS FOR LATHES AND OTHER MACHINE TOOLS

Jules Louis Jeanneret, 13-21, rue Henri Gelin, 79 Niort, France

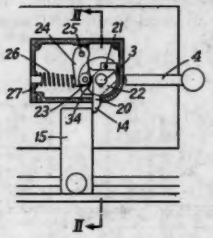
Filed May 14, 1970, Ser. No. 37,273

Claims priority, application France, May 21, 1969, 6916590

Int. Cl. B23b *21/00*

U.S. Cl. 82—22 **4 Claims**

A stop mechanism for controlling the advance of a saddle of a screwcutting lathe comprises a cam mounted on a shaft operatively connected to a drive transmitting member. The cam has a ramped portion and is contacted by a pressure roller. When the saddle reaches a predetermined position along the lathe bed the cam is rotated causing the roller to contact the ramped portion and effect an abrupt further rotation of the cam. Rotation of the shaft during the abrupt rotation of the cam causes disengagement of the drive transmitting member from the drive of the saddle.



3,668,954

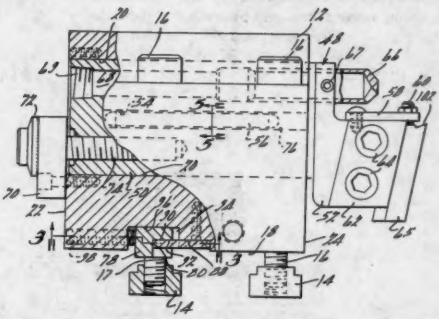
FORM TOOL HOLDER

Robert S. Brown, II, Grass Lake, Mich., assignor to Federal Screw Works, Detroit, Mich.

Filed May 19, 1970, Ser. No. 38,759

Int. Cl. B23b *29/10*

U.S. Cl. 82—36 **7 Claims**



A form tool holder adapted to be mounted on the slide of an automatic screw machine. The tool holder has a base provided with a guide opening in which the shank of a tool carrier is slidably fitted. The base is slotted along one side of the guide opening to define a deflectable base wall which can be clamped against the carrier shank to lock the carrier in any desired position. The base has a key on its lower surface which is adjustable about a pivot axis to facilitate squaring of the base to a keyway on the slide. The carrier is reversible in the base guideway for either upcutting or downcutting and it can be set for either right hand, left hand or zero tool relief.

3,668,955

GLASS HANDLING AND CUTTING SYSTEM

Charles F. Rupprecht, and Frank Wiker, both of Memphis, Tenn., assignors to Binswanger Glass Co., Richmond, Va. and Piper Precision Dies, Inc., Collierville, Tenn., part interest to each

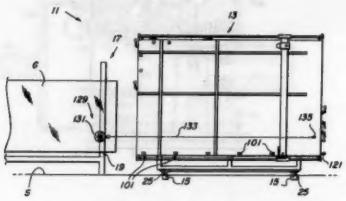
Filed Sept. 8, 1970, Ser. No. 70,121

Int. Cl. B26d *3/08*

U.S. Cl. 83—6 **8 Claims**

A system for handling plate glass and for cutting same. The system includes a self-propelled apparatus on tracks movable to positions adjacent selected bins, containing the substantially vertically disposed glass, located adjacent the tracks. The apparatus includes a tiltable top assembly for tilting to a

substantially vertical loading position for loading the glass from the selected bin, and includes power-actuated retrieving means for attachment to the glass to pull the glass from the bin to the top assembly. After loading, the top assembly is moved into a horizontal position. The apparatus includes



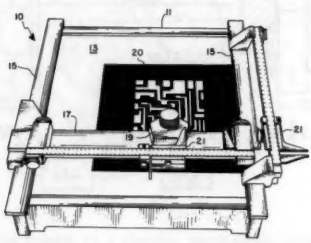
means for scoring the glass by a single operator shoving a carriage means across a bridge means to the other side of the apparatus where there is located bumper means for returning the carriage means to the operator's side of the top assembly and trip means for disengaging the cutter means from the glass.

3,668,956

MICROCIRCUIT NEGATIVE CUTTER

Douglas W. Whipple, Hampton, and Earl R. Blymiller, Williamsburg, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronatuics and Space Administration

Filed Aug. 4, 1970, Ser. No. 60,876
Int. Cl. B26d *3/08, 5/02*
U.S. Cl. 83—8 **2 Claims**



A manually operated X–Y coordinate cutter for making surface cuts with great accuracy in all three cutting dimensions. The cutting blade is rotated to cut in the X or Y direction and adjusted, in combination with a roller which contacts the work, to make cuts of uniform depth in the work. The roller and cutting blade are spring-mounted to ride smoothly over surface irregularities while maintaining a constant cutting depth. A pattern, placed between a translucent cutting surface and a translucent workpiece, is illuminated by a light box for use as a rough guide during cutting operations. X–Y dimensions of the cuts are laid out from a reference point on the pattern by positioning the cutting blade with verniers.

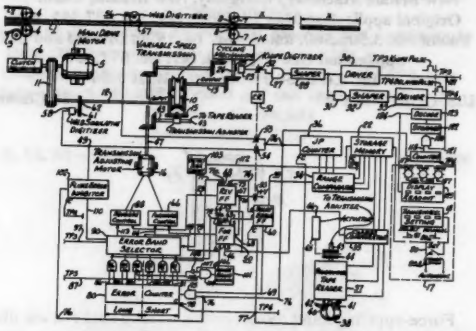
3,668,957

SHEET LENGTH CONTROL SYSTEM

Jay Nido, Catonsville, Md., assignor to Koppers Company, Inc.

Filed Aug. 8, 1969, Ser. No. 848,469
Int. Cl. B26d *5/00*
U.S. Cl. 83—37 **15 Claims**

A sheet length control system for use in connection with a material feeding and material processing apparatus to maintain uniform treatment of the material as processed by the processing apparatus within a predetermined and desired tolerance. Such material processing apparatus is exemplified in the use of a cutoff machine to cut into equal desired sheet lengths a continuously moving web of material. Digitizer means are used to produce signals the ratio of which is representative of the desired sheet length and the amount that the ratio of the signals varies from the desired sheet length ratio is used to produce an error signal indicative of whether the sheet length cut is shorter or longer than the



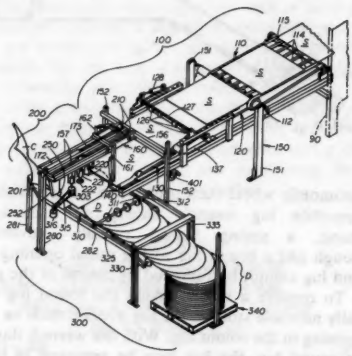
predetermined sheet length value. Error band selective means receives the error signal produced to produce a signal characteristic of the error magnitude. Means are provided to be responsive to the error band selective signal for correcting the sheet length to correspond to the predetermined sheet length value within an acceptable tolerance.

3,668,958

AUTOMATIC DISK CUTTER

Robert E. Kinsey, 16 Westwood Road, Augusta, Maine

Filed Nov. 5, 1970, Ser. No. 87,233
Int. Cl. B26d *7/06*
U.S. Cl. 83—88 **20 Claims**



A continuous rotary cutter which cuts disks from square sheets, such as paper, from a roll of stock. The square sheets are fed from one tape conveyor to another of a slower speed for overlapping and stacking a predetermined number of sheets, which stack is fed to and grabbed by a pair of retractable spears which pierce the stack of sheets near its corners and pull it onto the disk cutting table against a pair of continuously rotating cutting disks. A collection platform for the stack may also be used for supporting the stack to be grabbed by the spears, and it may be retracted for disks larger in diameter than the pulling distance of the spears to insure release of the stack onto the cutting table. The sheets on the cutting table are then clamped together axially at their centers by a downward reciprocable rotatable center clamping pivot means which presses the sheets against a rotatable central portion of the cutting table. Then one of the two spears releases while the other spear positively moves the

stack tangentially of the periphery of the disks to be cut to start the stack of sheets rotating through the continuous disk cutters, the friction of which cutters continue to rotate the sheets about the center clamping pivot means. As soon as the disks are cut, an edge clamping pivot means near the periphery of the cut disks engages the stack of cut disks so that the rotational inertia of the disks imparted by the cutters causes the disks to rotate about this edge clamping pivot means to move them from the cutting table and under the take-off rollers of the discharging conveyor, and thus provide room for the next stack of sheets to be cut. The overlapping stacks of cut disks may be fed by an up-from-the-bottom type stacker conveyor or elevator onto a pallet for removal from the machine. The feeding means, center clamping means, and take-off means for the cut disks may be adjustable simultaneously, towards and away from the disk cutters for cutting different diameter disks.

3,668,959

PROCESS AND DEVICE FOR ADVANCING AND SIMULTANEOUSLY CENTERING SHEET MATERIAL

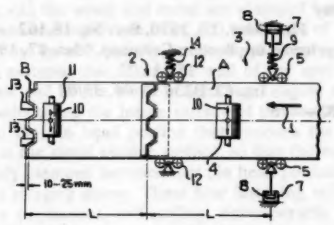
Wolfgang Max Egon Richter; Edgar Lab, and Hans Werner Sieblist, all of Seesen, Germany, assignors to Schmalbach-Lubeca-Werke Aktiengesellschaft, Braunschweig, Germany

Filed Aug. 12, 1970, Ser. No. 63,117

Claims priority, application Germany, Aug. 12, 1969, P 19 40 912.2

Int. Cl. B26d *3/00, 5/20*

U.S. Cl. 83—48 **12 Claims**



This disclosure relates to a scroll cutting apparatus which is provided with a feed mechanism which automatically assures centering of the sheet material upon each advance thereof prior to the actuation of the scroll cutter. The feed mechanism includes a first feed disposed in advance of the scroll cutter and a second feed between the scroll cutter and a centering stop. Each feed has associated therewith guide means engaging the opposite edges of the sheet material with one half of each guide means being fixed and the other half being resiliently mounted. The feed mechanism includes rollers which rotate to advance the sheet material and which are hunted axially thereof so as to transversely hump the sheet material in cooperation with the guide means so as to perfect the centered feeding of the sheet material.

3,668,960

ARRANGEMENT FOR LUBRICATING THE PERFORATING PINS OF TAPE AND CARD PERFORATORS

Rudolf Weber, Olbrunn, and Emil Jahn, Pforzheim, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

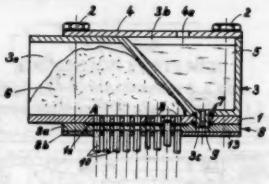
Filed Oct. 26, 1970, Ser. No. 84,016

Claims priority, application Germany, Oct. 28, 1969, P 19 54 239.3

Int. Cl. B26f *1/14, 1/24*

U.S. Cl. 83—169 **3 Claims**

A self-lubricating perforator arrangement wherein a horizontal guide plate for the perforating needles comprises parallel upper and lower partial guide plates which define a capillary gap between them. A unit situated above the partial plates contains an oil reservoir which communicates with the capillary gap to enable a regulated lubrication of the needles as they pass through the partial plates during operation. Also



contained in the unit is a channel directly above the needles and the plates to receive the chads.

3,668,961

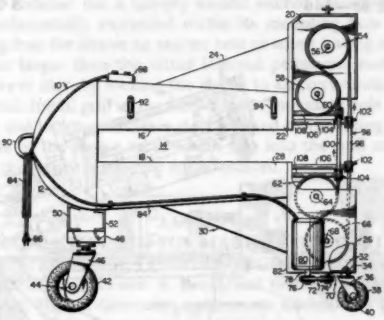
PORTABLE BAND SAW

Donald E. Blue, 1717 6th Street, N.W., Albuquerque, N. Mex.

Filed Dec. 30, 1969, Ser. No. 889,077

Int. Cl. B26d *1/46*

U.S. Cl. 83—201.04 **15 Claims**



There is disclosed a portable band saw having a travelling band cooperating with pulleys so located that the front and rear band portions are positioned in relatively close but spaced relationship. The pulleys rotate parallel axes. Longitudinally spaced guide means are incorporated which cooperate respectively with the front and rear portions of the band so that, with adjustment, the guide means cause the band to be disposed with the rear portion in desired alignment with the front portion, thus permitting the portable band saw to selectively make either straight or angular cuts.

3,668,962

WEB-CUTTING APPARATUS

Eric George Arthur Chapman, Ilford, England, assignor to Ilford Limited, Ilford, England

Filed May 12, 1970, Ser. No. 36,595

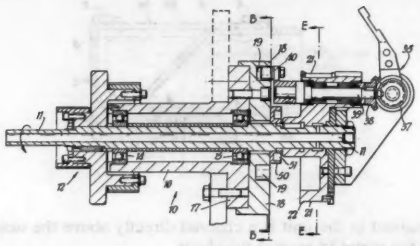
Claims priority, application Great Britain, May 13, 1969, 24,298/69

Int. Cl. B26d *1/36, 1/56*

U.S. Cl. 83—323 **4 Claims**

This application describes web cutting apparatus comprising a rotary drum having a substantially radially inwardly extending shaped slot in its periphery, drive means for driving said drum, a cutter arm, cam means which is adapted to control the movements of said cutter arm and which is connected to be driven by said drive means, the control of the cam means and the shape of the cutter arm being such that in

operation the cutter arm will cut through a web on said drum at said slot and will descend, together with the leading edge



of the trailing portion of the cut web, into said slot and remain in the said slot for a predetermined period.

3,668,963

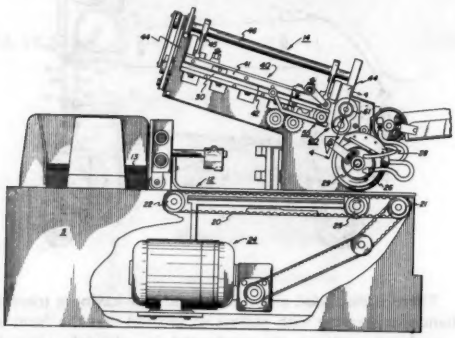
ADJUSTABLE LABEL KNIFE

Robert A. Davis, Mundelein, Ill., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 23, 1970, Ser. No. 91,775

Int. Cl. B26d *25/12*

U.S. Cl. 83—346 **8 Claims**



An adjustable roller type knife for use as a label cutter in article addressing machines. The knife comprises axially aligned relatively rotatable roller discs, each with a radially extended arcuate segment which cooperates, on rotation of the knife, with an adjoining anvil roller to form a nip for drawing uncut label material therethrough, the length of label material being a function of the composite arcuate length presented by the segments. A knife blade is carried by one disc to cut the label material, and releasable locating means are provided to enable the discs to be turned through controlled arcs relative to one another to adjust the knife for different length labels.

3,668,964

CHOPPER BODY

Eric Ellis Lomas, Wallasey, England, assignor to Fibreglass Limited, Ravenhead, St. Helens, Lancashire, England

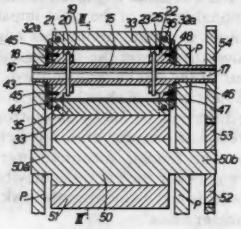
Filed Aug. 22, 1968, Ser. No. 754,537

Claims priority, application Great Britain, Aug. 22, 1967, 38,653/67

Int. Cl. B23d *25/12*, *35/00*

U.S. Cl. 83—347 **3 Claims**

Apparatus for chopping sized glass fiber filaments comprising two co-operating parallel rollers between which the filaments are passed one roller having a series of spaced blades projecting from its surface; gaps being provided in this roller



between successive blades to reduce the area of this roller in contact with the filaments at any given time.

3,668,965

DEVICE ON CUTTING FACILITIES FOR PACKING MACHINES

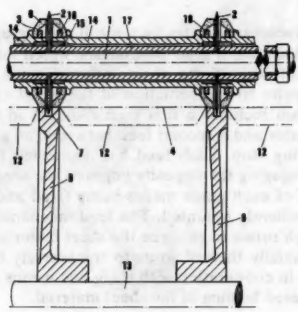
Rudolf Kreuschmer, Ludwigstrasse 35, 8963 Sankt Mang, Germany

Filed Mar. 10, 1970, Ser. No. 18,162

Claims priority, application Germany, Mar. 27, 1969, P 19 15 611.7

Int. Cl. B23d *19/06*, *33/02*

U.S. Cl. 83—476 **5 Claims**



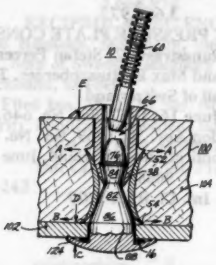
A gang-slitting machine, particularly for accurately slitting web-like sheets in which a plurality of rows of bags or packages have been preformed, to produce rolls of the bags or packages, comprising: disc knives securingly mounted on a driven shaft; backing means in the form of a guide disc for every disc knife; and two retaining discs for each knife, the retaining discs being of a smaller diameter than each disc knife and disposed one on either side thereof, whereby the slit strips each containing one row of bags or packages are pressed between each retaining disc and its associated guide disc and are guided so that the slitting is done only on the seams and not incorrectly beyond.

3,668,966

FASTENER FOR METAL-WOOD STRUCTURES

Charles A. Kincaid, Crestwood, Ill., assignor to Key Research and Development Company, Mercer Island, Wash.

Filed Sept. 21, 1970, Ser. No. 73,696
Int. Cl. F16b *13/06*
U.S. Cl. 85—67 **9 Claims**



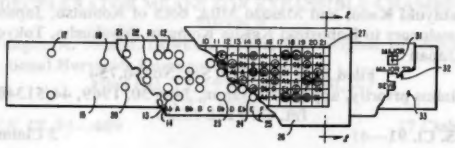
A fastener for securing a structure of metal and wood together wherein the metal forms at least one outside surface. The fastener comprises three parts: a pin, a locking sleeve and a swaging sleeve, which, when properly arranged within an aperture or straight hole in the structure, is installed by a conventional fastener installing tool. The three parts lock together during the fastening procedure and subsequently: (a) the wood and metal are clamped between the pin head and locking sleeve head, (b) both ends of the swaging sleeve are moved radially outwards, thereby penetrating the wood material that forms the wall of the aperture, and (c) the one end of the wood-penetrating swaging sleeve extends radially along the inside surface of the metal which is parallel to the pin head portion that overlaps the aperture diameter at the metal outside surface, so that the metal layer is separately clamped between that pin head portion and one end of the swaging sleeve. These four fastening actions then produce a permanent, self-sealing, untamperable joint for metal-wood or similarly composed structures.

3,668,967

CHORD INDICATOR

Albert Malis, 4954 Hazeltine Avenue, Sherman Oaks, Calif.

Filed July 27, 1970, Ser. No. 58,390
Int. Cl. G09b *15/02;* **G10b** *15/00*
U.S. Cl. 84—471 **6 Claims**



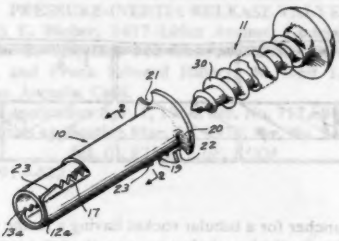
The invention involves an indicator which identifies the various musical chords and displays the location of the notes comprising the various musical chords upon a simulated finger board of a fretted stringed instrument. This is accomplished in the instant invention by providing a sliderule device having a transparent outer member with indicia imprinted thereon, including a replica of a fingerboard and a series of characters which designate the particular tone which is made when a finger is pressed down at that point on the fingerboard. The device further includes first and second slides which carry a plurality of spots along the length thereof. By manipulation of the slides, and thier associated indexing means, the spots are positioned behind pre-determined characters on the fingerboard to make such characters stand out and be easily read by the viewer. The characters correspond to the notes in the chord selected by the indexing means. In this manner, all the notes included in a preselected chord are identified and located at their respective positions on the simulated fingerboard.

3,668,968

EXPANSION FASTENER

Henry J. Modrey, Eagle Drive, Stamford, Conn.

Filed Apr. 14, 1970, Ser. No. 28,412
Int. Cl. F16b *13/06*
U.S. Cl. 85—83 **6 Claims**



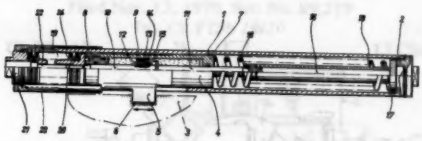
The fastener has a spirally wound anchor sleeve which is circumferentially expanded within its mounting hole by inserting into the sleeve an anchor bolt or screw having a cross-section larger than the initial internal peripheral outline of the sleeve thereby locking the sleeve to the surrounding wall material. Initial grip of the sleeve in the mounting hole is provided and locking is further strengthened by providing on the outside of the sleeve teeth which bite into the wall material when the sleeve is inserted and expanded.

3,668,969

RECOIL MEHANISM FOR MACHINE GUNS WITH A HYDRAULIC COUNTER-RECOIL BRAKE

Karl Harbrecht, Eisental B. Bruhl, and Gerhard Munn, Dusseldorf, both of Germany, assignors to Rheinmetall GmbH, Dusseldorf, Germany

Filed Mar. 6, 1970, Ser. No. 17,231
Claims priority, application Germany, Mar. 20, 1969, P 19 14 188.9
Int. Cl. F41f *19/02*
U.S. Cl. 89—43 R **5 Claims**



A recoil-mechanism for machine guns with a hydraulic counter-recoil brake, wherein the recoil energy for effecting the weapon advance is stored and with a hydraulic braking piston equipped with throttle valves, which comprises a cylinder connected with reciprocating parts of the weapon and receiving a hydraulic braking piston. A housing has the cylinder disposed therein for longitudinal displacement and receiving the recoil-mechanism, and is connected with immovable parts of the weapon and supported on both sides by resilient abutments. Additional abutment means are effective upon the braking piston. The abutment means set the piston forwardly during the return stroke of the cylinder relatively to the latter, such, that the piston rod, formed as a ram and extending out from the end wall of the cylinder, is supporta-

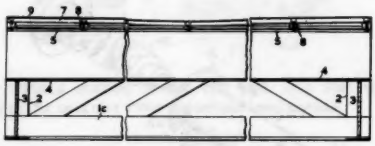
ble during the forward stroke of the forward resilient abutment, before the cylinder itself has reached its initial position.

3,668,970

ROCKET LAUNCHERS

Arthur Gwynfryn Walters, Bexley, England, assignor to Secretary of State for Defense in the Government of the United Kingdom

Filed July 22, 1958, Ser. No. 750,262
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.819 2 Claims



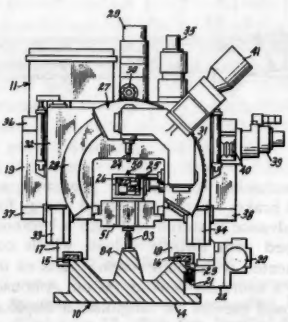
1. A launcher for a tubular rocket having a frame comprising four longitudinal angle beams, one at each corner of the frame, a lattice of struts connecting the beams, a series of transverse plates for stiffening the frame and having U-shaped recesses in their upper edges, and a U-section trough welded into the U-shaped recesses; a guide rail support fixed to the upper surface of each of the upper two angle beams; a plurality of spacers at intervals along the upper surfaces of the guide rail supports the spacers varying in thickness from zero at the center to a maximum at each end of each support the thicknesses being so graduated that the upper faces of the spaces lie on a smooth curve; and two guide rails bolted to the guide rail supports and in contact with the upper surfaces of the spacers whereby each said guide rail is constrained in an upwardly curved position, towards the opposite ends thereof.

3,668,971

METHOD AND APPARATUS FOR MACHINING AN ELONGATED WORKPIECE

Lewis A. Dever, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed June 2, 1970, Ser. No. 42,757
Int. Cl. B23c *3/00*
U.S. Cl. 90—11 R 27 Claims



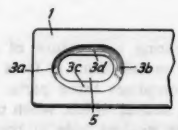
An elongated workpiece, which is maintained under tension, is machined along its surfaces by relative longitudinal movement between the workpiece and a support for a pair of perpendicularly disposed cutting tools. A fixture, which is connected to the support for the cutting tools so that the fixture is always the same longitudinal distance from the cutting tools, has the elongated workpiece pass therethrough. The fixture has two reference surfaces, which are perpendicular to each other, against which two perpendicular surfaces of the workpiece are urged by pressure rollers in the fixture acting against workpiece surfaces, which are parallel to the surfaces of the workpiece engaging the reference surfaces.

3,668,972

OSTEOSYNTHETIC PRESSURE PLATE CONSTRUCTION

Martin Allgower, Calunastrasse 2; Stefan Perren, Kirchgasse 11, both of Chur, and Max E. Russenberger, Tannenstrasse 26, Schaffhausen, all of Switzerland

Original application June 16, 1967, Ser. No. 646,542. Divided and this application Apr. 30, 1969, Ser. No. 828,069
Claims priority, application Switzerland, June 22, 1966, 9068/66
Int. Cl. B23c *1/00*
U.S. Cl. 90—11 C 1 Claim



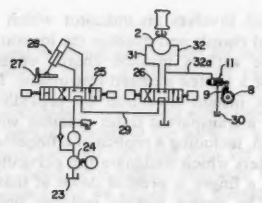
An osteosynthetic pressure plate includes a slot formation for receiving a bone fixing screw which is adapted to be secured to a bone part which is to be mended. The slot is formed with an edge which includes an oblique portion or ramp having an inclination such that when it is engaged by the underside of a head portion of a bone fixing screw there will be a displacement of the pressure plate in a direction to move the ramp portion away from the fixing screw and to cause the plate to apply a pressure to hold the bone parts in tight engagement. The plate is advantageously useable with screws having heads of spherical form or conical form, for example. The inclination of the ramp and the configuration of the walls bounding the slot of the pressure plate are such that there will be a uniform and even shifting of the plate having the slot when the ramp portion of the walls bounding the slot is engaged by the screw head to cause the desired displacement of the pressure plate in order to displace the bone fragment toward tighter engagement with the adjacent bone fragment and into pressure engagement therewith.

3,668,973

HYDRAULIC OIL WINCH

Matayuki Kado, and Masazo Mita, both of Komatsu, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed June 29, 1970, Ser. No. 50,754
Claims priority, application Japan, June 30, 1969, 44/51348
Int. Cl. F15b *15/26*
U.S. Cl. 91—41 3 Claims



A hydraulic oil winch wherein the driving shaft of the hydraulic oil motor is provided with a ratchet wheel, and a lock pawl is pivotally mounted on a shaft so as to detachably

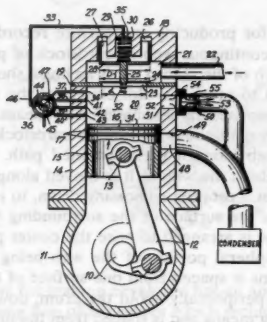
engage with the said ratchet wheel, the said lock pawl being interlocked with a hydraulic oil cylinder mechanism so that it may be engaged with the said ratchet wheel when the hydraulic oil motor is running forwardly and stopped, and also may be disengaged from the ratchet wheel when the oil motor is running reversely by change-over operation of the change-over valves.

3,668,974

RECIPROCATING ENGINE

Manfred Otto Hagdorn, Stockholm, and Kjell T-Son Sandberg, Taby, both of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Jan. 28, 1970, Ser. No. 6,503
Claims priority, application Sweden, Jan 29, 1969, 1174/69; Dec. 16, 1969, 17298/69
Int. Cl. E01l *25/06, 21/02*
U.S. Cl. 91—242 **10 Claims**



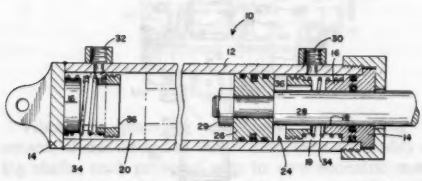
This invention relates to a reciprocating engine which operates with a compressible working medium like steam and has a cylinder and a cooperating cylinder head. A piston moves forward and backward in the cylinder space. Steam is supplied under pressure to an outer space in the cylinder head and the flow of such steam to the cylinder space is controlled by a valve responsive to the pressure of the steam. In order to regulate the flow of steam into the cylinder space in the first part of each forward stroke of the piston, the valve is acted upon and closed by steam under pressure which becomes available to perform this function when the piston reaches a particular position in each forward stroke.

3,668,975

DECELERATOR MEANS FOR EXPANSIBLE CHAMBER DEVICE

Vaughn A. Nelson, Downers Grove, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Oct. 13, 1970, Ser. No. 80,367
Int. Cl. F15b *15/22*
U.S. Cl. 91—409 **17 Claims**



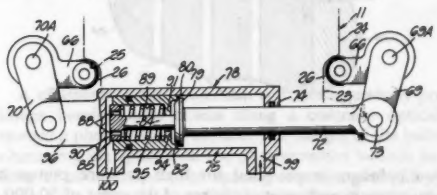
A decelerator means for a hydraulic motor having a housing, a piston movable therein defining an expansible fluid chamber within said housing, fluid ports permitting the admission or exhaust of fluid from said chamber, the decelerator means comprising a movable member within the chamber having an exposed surface capable of substantially closing off said port upon the exhaust of fluid from the chamber, said surface having interruptions therein so as to provide metering orifices to meter the exhaust of fluid from said chamber and retaining means interconnecting said housing and said movable member for maintaining said member in close proximity to the port but permitting sufficient limited movement whereby the admission of fluid energy into said chamber will be unimpeded by said member.

3,668,976

FLIGHT REFUELING RECEPTACLE HAVING PRESSURE-INERTIA RELEASE VALVE

Ellsworth E. Hieber, 1417 Liden Avenue, Glendale, Calif.; Thomas P. Taquino, 310 Tonyon Road, Sierra Madre, Calif., and Frank Edward Hillery, 30 West Las Flores Avenue, Arcadia, Calif.

Original application Apr. 1, 1968, Ser. No. 717,680. Divided and this application Mar. 23, 1970, Ser. No. 24,930
Int. Cl. F15b *11/08, 13/04*
U.S. Cl. 91—422 **7 Claims**



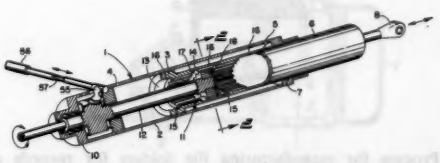
A hydraulic actuator, which is particularly adapted for use with and to automatically release the locking means of an in-flight refueling nozzle, and contains a cylinder and piston structure connected with a piston rod, the piston having a piston head with an axial flow passage controlled by a valve normally spring-urged to a closed position, when the piston structure is in a holding position at one end of the cylinder, but adapted to open under a suddenly applied highly accelerating force and permit movement of the piston to the other end of the cylinder.

3,668,977

ACTUATOR LOCK

Glenn S. Beidler, Elkhart, Ind., assignor to Pneumo Dynamics Corporation, Cleveland, Ohio

Filed Nov. 13, 1970, Ser. No. 89,319
Int. Cl. F15b *15/26*
U.S. Cl. 92—17 **13 Claims**



An actuator lock for selectively limiting the movements of a linear actuator comprising an axially fixed lock shaft having a splined portion rotatable into and out of alignment with a correspondingly splined portion on the axially movable part of the actuator. When the splined portions on the lock shaft and axially movable part are in proper alignment with each other, the axially movable part is free to move axially relative to the lock shaft, but when the lock shaft is rotated so that

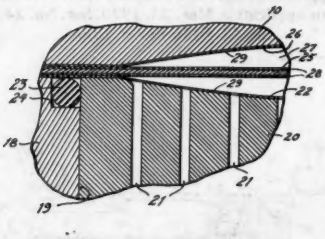
the splined portions are out of alignment with each other, axial movement is limited to the axial clearance between the ends of the splined portions. The relative locations and lengths of the splined portions on the lock shaft and movable part of the actuator determine the lock positions and extent of permissible axial movement when the lock shaft is rotated to a locking position.

3,668,978

DIAPHRAGMS FOR HIGH PRESSURE COMPRESSORS AND PUMPS

John C. Bowen, Huntingdon Valley, Pa., assignor to The Duriron Company, Inc., Dayton, Ohio

Filed June 3, 1970, Ser. No. 42,957
Int. Cl. F01b *19/00*
U.S. Cl. 92—98 **5 Claims**



A diaphragm is provided for high pressure pumps and compressors operating at pressures of the order of 30,000 psi and higher, the diaphragm having a greatly extended life and comprising a metal diaphragm with a friction reducing and dirt absorbent film in contact with the diaphragm to prevent fretting corrosion. The film can be on the diaphragm, or the clamping portions of the casing in engagement with the periphery of the diaphragm, or on both.

3,668,979

MANUFACTURING PROCESS FOR A FILE FOLDER

Andre Raymond Daniel Cariven, 5, rue Saint Pantaleon, Toulouse, France

Filed Oct. 7, 1969, Ser. No. 864,970
Claims priority, application France, Oct. 7, 1968, 5403; Nov. 29, 1968, 175902
Int. Cl. B31d
U.S. Cl. 93—1 R **4 Claims**

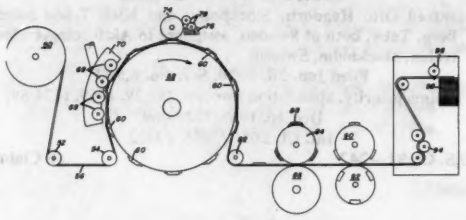
Process for manufacturing file folders for records and documents, said file folders comprising a certain number of flaps, with one face of each flap being provided with three tiered pockets for holding the documents, said process consisting of using two sheets of flexible material, whereby the narrowest of the sheets is connected to the widest by a stitching or by a line of glue, then of folding over the two sheets so as to form evenly tiered pockets, all objects resulting from said process and arrangements being within the scope of the invention.

3,668,980

METHOD AND APPARATUS FOR MANUFACTURING APERTURE CARDS

Frederick F. Tone, Holley, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 3, 1970, Ser. No. 60,490
Int. Cl. B31d
U.S. Cl. 93—1 R **28 Claims**



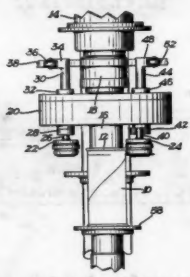
Apparatus for producing an aperture record card from a substantially continuous web of cardstock of predetermined thickness, each of the record cards having a shouldered aperture arranged to receive a film chip over the aperture. The apparatus comprises the combination of means for supplying a substantially continuous web of the cardstock and for conveying the web along a predetermined path. Means is arranged to emboss the web as it is moved along the path, for example about a rotating embossing drum, to raise a portion thereof above the surface of the surrounding web. The embossing means is arranged to raise the center portion higher than the peripheral portion of the web being embossed. A grinding means is spaced from one surface of the web along the path, i.e. peripherally about the drum, downstream from the embossing means and is spaced from the drum a distance greater than the thickness of the web but less than the height of both portions of the embossed surface of the web above the drum surface. The grinding means is arranged to form a rectangular ground area on the raised surface of the web. Means is arranged downstream from the grinding means to apply a layer of a fluid-impermeable material, such as molten thermoplastic, to the ground area of the web to seal and protect the surface of the web. Means is arranged to deemboss the ground area, and means is arranged to form an aperture through the web in the ground area.

3,668,981

APPARATUS FOR SCORING FIBER CANS

Charles Henry Turpin, Louisville, Ky., and John A. Ryan, Jeffersonville, Ind., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed May 18, 1970, Ser. No. 38,464
Int. Cl. B31b *1/16, 1/34, 43/00*
U.S. Cl. 93—36.5 R **4 Claims**



The outer surface of the body of a fiber can is scored by cutting through a portion of its thickness from the outside thereof with a cutting blade affixed to the lower end of a

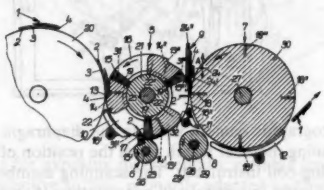
seaming roll which simultaneously crimps the lid to the body wall of the can. The cutting blade is circular in configuration and is positioned to rotate on a center which is offset laterally with relation to the center shaft of the seaming roll. The distance that the rotation axis of the cutting blade is offset can be selectively changed to precisely control the cutting depth.

3,668,982

APPARATUS FOR FOLDING THE CLOSING FLAP OF ENVELOPES

Kurt Stemmler, Neuwied, Germany, assignor to Winkler & Donnebier Maschinenfabrik und Eisengiesserei, Neuwied Rhine, Germany

Filed Mar. 19, 1971, Ser. No. 126,125
Claims priority, application Germany, Mar. 26, 1970, P 20 14 702.8
Int. Cl. B31b *21/00*
U.S. Cl. 93—62 **3 Claims**



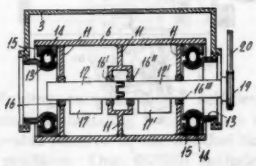
A machine for making envelopes has an apparatus for folding the closing flap of envelopes which includes a rotary prefolding cylinder provided with fixed abutment edges and suction holes, a mating cylinder having a rotary folding strip, a stop abutment for the prefolded envelope, a finish folding cylinder having suction holes and moving in the opposite direction to the prefolding cylinder and a pressing segment cylinder associated with the finish folding cylinder.

3,668,983

VIBRATIONS GENERATOR WITH MULTIPLE SHAFTS IN SERIES, ESPECIALLY FOR VIBRATING TAMPING MEANS

Domenico Domenighetti, Via Nosetto 6, Bellinzona, Switzerland

Filed May 18, 1970, Ser. No. 38,075
Int. Cl. E01c *19/28*
U.S. Cl. 94—50 V **1 Claim**



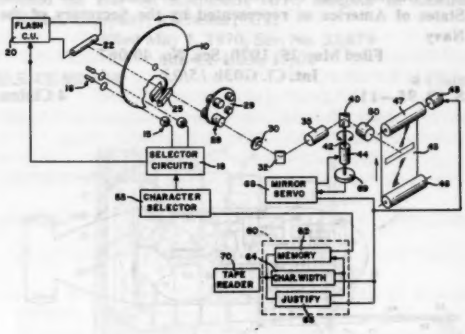
Vibrations generator especially for vibrating tamping means, characterized in that it comprises a plurality of rotating shafts, each provided with its own eccentric masses and connected to each other in series by means of coupling elements ensuring the rotational synchronism and transmitting the required torque; each shaft being supported by a single pair of rolling bearings; said shafts series being actuated by a device which applies a torque to at least one of the two ends of said shafts series.

3,668,984

OPTICAL CHARACTER SPACING SYSTEM FOR PHOTOTYPESETTING

Seymour Rosin, Massapequa, N.Y., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed May 4, 1970, Ser. No. 34,300
Int. Cl. B41b *21/22*
U.S. Cl. 95—4.5 **6 Claims**



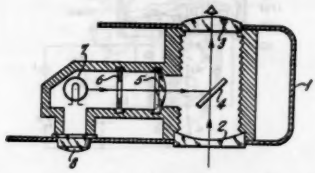
A character image projection system successively projects image bearing light beams along a common optical axis toward a photosensitive surface. The images of the individual characters are spaced on the photosensitive surface to form lines of composition. The spacing is accomplished by collimating the image bearing light beams, then diverting the collimated beam by means of a movable reflecting surface into a refocusing and scan lens assembly from which the light beams emit onto the photosensitive surface. The position of the reflector may be controlled by a servo mechanism which responds to character image space information from a computer. The refocusing and scan lens assembly incorporates compensation for the angular position of the reflecting member whereby the character images remain in focus and are properly spaced even though the photosensitive surface is maintained flat at the image plane of the system.

3,668,985

CAMERA FLASH INDICATING SYSTEM

Seiichi Wazumi, Toyokawa, Japan, assignor to Minolta Camera Company Limited, Osaka, Japan

Filed Dec. 12, 1968, Ser. No. 783,241
Int. Cl. G03b *17/20*; G01j *1/52*
U.S. Cl. 95—10 C **7 Claims**



A camera flash indicating signal system includes a camera view finder and a mirror located in the finder for reflecting light from a transverse path to the finder eyepiece. A convex lens, indicator element and electric lamp are spaced along the transverse path. The indicator element is located at the conjugate position of the eyepiece through the lens and the lamp is visible through a camera front window. The lamp is connected to a battery through a series connected first switch

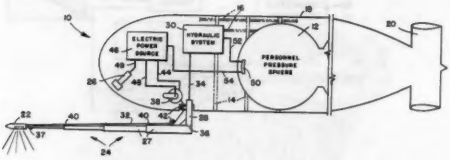
and a normally open second switch coupled to the camera shutter button for closing the second switch before shutter release. The first switch is either actuated selectively, or by a photocell controlled mechanism.

3,668,986

UNDERWATER IMAGING SYSTEM FOR DEEP SUBMERGENCE VEHICLES

Irov P. Lemaire, San Gabriel, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed May 25, 1970, Ser. No. 40,067
Int. Cl. G03b *15/03*
U.S. Cl. 95—11 **4 Claims**



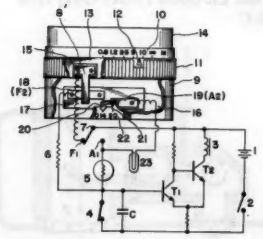
An imaging system for a deep submergence vehicle comprising a light source; positioning means mounted on the vehicle for selectively extending and retracting the light source with respect to the vehicle; and a camera receiver mounted on the vehicle for viewing the area lighted by said light source.

3,668,987

ELECTRIC SHUTTER CONTROL CIRCUITRY

Toshio Hayashi, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Minami-ku, Osaka, Japan

Filed Aug. 25, 1970, Ser. No. 66,766
Claims priority, application Japan, Aug. 29, 1969, 44/68755
Int. Cl. G03b *7/16*
U.S. Cl. 95—11 R **4 Claims**



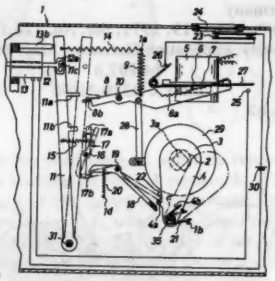
First and second switches each having respective first and second switch positions establish shutter control by either a fixed timing circuit or a brightness measuring circuit in accordance with the setting of a distance adjustment ring. The contacts of the switches are mounted on a rotatable change over ring and the distance adjustment ring. The change over ring includes means for setting the flash guide number.

3,668,988

EXPOSURE CONTROLLING STRUCTURE FOR PHOTOGRAPHIC APPARATUS

Dieter Engelsmann, Unterhaching, and Rolf Schroder, Munich, both of Germany, assignors to AGFA-Gevaret Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 5, 1970, Ser. No. 87,175
Claims priority, application Germany, Nov. 6, 1969, P 19 55 831.7
Int. Cl. G03b *19/02, 9/02, 9/08*
U.S. Cl. 95—11 R **14 Claims**



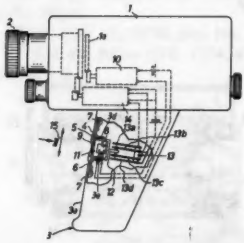
A photographic camera wherein the diaphragm is adjusted by a scanning member which scans the position of the needle in a moving-coil instrument. The scanning member is free to scan the needle in response to energization of an electromagnet which is energizable by the camera release. The scanning member then opens a switch which deenergizes the electromagnet whereby the latter permits an impeller to propel the blade of the shutter to an open position subsequent to appropriate adjustment of the diaphragm.

3,668,989

CAMERA OPERATING DEVICE

Alfred Winkler; Anton Theer, both of Munich; Johann Zanner, Unterhaching, and Fridolin Hennig, Munich, all of Germany

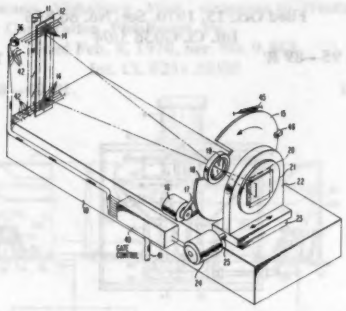
Filed Aug. 6, 1970, Ser. No. 61,598
Claims priority, application Germany, Aug. 16, 1969, P 19 41 752.8
Int. Cl. G03b *19/00*
U.S. Cl. 95—11 R **18 Claims**



A still camera or motion picture camera wherein a wall of the housing has an opening for a frame which is movable in the plane of such wall and surrounds a diaphragm which is deformable to actuate the shutter. Movements of the frame with reference to the wall are used to actuate one or more additional switches which control the motor for a zoom lens, to open or complete the circuit of an exposure meter, to initiate or terminate a fading operation, to effect rewinding of film and/or to initiate or terminate other operations in the

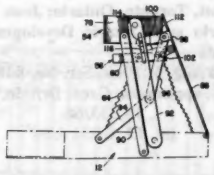
camera. The frame can perform rotary, pendulum, reciprocatory and/or other movements with reference to the housing.

3,668,990
PRINTED CIRCUIT GENERATOR
Lawrence P. Hayes, Johnson City, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 10, 1969, Ser. No. 883,715
Int. Cl. G03b *29/00*
U.S. Cl. 95—12 **7 Claims**



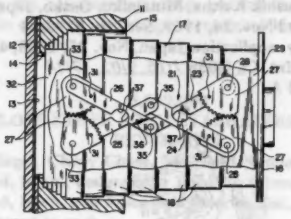
Apparatus for exposing incrementally variable length lines on a photosensitive surface primarily adapted to form printed circuits. An elongated slit for passing light is covered by a plurality of independently operable gates, each controlling light emission from a unique portion of the slit. Emitted light is then controlled by a shutter-lens complex to impinge on the sensitized surface of a workpiece which can be indexed and rotated for exposure of both orthogonal and non-orthogonal lines.

3,668,991
FOLDING CAMERA
Irving Erlichman, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed June 13, 1969, Ser. No. 832,945
Int. Cl. G03b *17/04*
U.S. Cl. 95—39 **31 Claims**



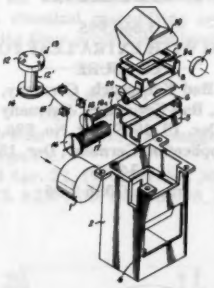
A compact folding camera of the self-developing type comprising a housing including two sections coupled by a bellows and movable relative to one another between folded and extended positions. One section includes means for locating a photosensitive element in position for exposure and means for processing the exposed element. The second section includes an objective lens and a mirror for reflecting light from the lens to the photosensitive element. The mirror is movable to permit viewing through the lens. The second section comprises two relatively movable portions, one including the lens, a shutter, components of a viewing and/or ranging system, and a motor for driving the shutter and the processing means, the mirror being included in the other portion and the bellows being attached thereto. The two portions are adapted to couple with one another in the extended position and be separated for more compactness in the folded position, while the mirror functions to prevent admission of light into the camera when the two portions are separated.

3,668,992
LENS HOUSING SUPPORT LINKAGE FOR BELLOWS TYPE CAMERAS
Donald M. Harvey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 1, 1970, Ser. No. 33,679
Int. Cl. G03b *17/04*
U.S. Cl. 95—39 **4 Claims**



A linkage for supporting an extendable lens housing of a bellows type camera includes two identical link assemblies comprising link bars maintained in symmetrical relation to each other by meshed spur gear segments. The compactness afforded by the subject linkage construction allows the linkage to be concealed within the camera bellows without sacrificing the accuracy with which the lens housing is maintained in parallelism with the camera body member.

3,668,993
DEVICE FOR VIEWING INDICIA
Hiroshi Kurie, Tokyo-to, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed Aug. 11, 1970, Ser. No. 62,896
Claims priority, application Japan, Aug. 27, 1969, 44/80767
Int. Cl. G02b *27/32*; G03b *19/12*
U.S. Cl. 95—42 **10 Claims**



A device for viewing one of a plurality of indicia. At least one pair of indicia are provided, and an elongated light-permeable shaft forms a carrier which carries the pair of indicia. The indicia are angularly displaced by 180° about the axis of the shaft and are axially displaced therealong by a distance at least equal to the axial space occupied along the shaft by each of the indicia. A transmission is available to the operator for rotating the shaft about its axis, and in one angular position of the shaft one of the indicia is in alignment with a frame to be viewed therethrough. By operating the trans-

mission it is possible to rotate the shaft through 180° while at the same time axially displacing the shaft by a distance equal to the axial distance between the pair of indicia in a direction which will enable the other of the indicia to occupy the position formerly occupied by the first of the indicia when the shaft is in the particular angular position where the first of the indicia is in alignment with the frame, so that in this way one or the other of the indicia can be positioned in alignment with the frame to be viewed therethrough.

3,668,994

AUTOMATIC DIAPHRAGM APERTURE ADJUSTING DEVICE FOR FLASH PHOTOGRAPHY IN CAMERA WITH INTERCHANGEABLE LENS

Yoshifusa Fujii, Kaizuka City, Japan, assignor to Minolta Camera Kabushik Kaisha, Minamiku, Osaka, Japan

Filed Nov. 24, 1969, Ser. No. 879,014
Claims priority, application Japan, Nov. 25, 1968, 43/86242
Int. Cl. G03b 7/16, 9/02, 17/14
U.S. Cl. 95—64 A **5 Claims**

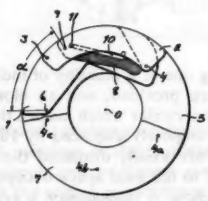
A diaphragm aperture adjusting device automatically detects the displacement of the inner cylinder of an interchangeable lens which is set to a distance value for focusing. The diaphragm aperture of the lens is automatically controlled to the value in accordance with the displacement of the inner lens cylinder by adjusting members for flash photography provided in the camera body. When various interchangeable lenses with different axial displacements are employed, the adjustment to compensate for the difference is made to provide proper aperture values.

3,668,995

IRIS DIAPHRAGM WITH EXTRA LEAF FOR COMPLETE CLOSURE

Klaus Bardutzky, Bad Kreuznach, Germany, assignor to Jos Schneider & Co., Bad Kreuznach, Germany

Filed Dec. 18, 1969, Ser. No. 886,425
Claims priority, application Germany, Dec. 18, 1968, P 18 15 349.6
Int. Cl. G03b 9/06
U.S. Cl. 95—64 R **7 Claims**



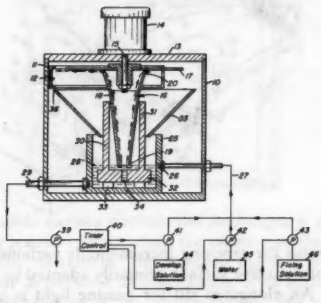
An iris diaphragm with a set of iris leaves, pivoted to a fixed mounting ring, and a set of control leaves, articulated to respective iris leaves and pivoted to a rotatable setting ring, further includes an extra leaf pivoted to the mounting ring and coupled with one of the control leaves through a pin engaging in an L-shaped groove whereby, in a limited inwardly swung position of the iris leaves, further rotation of the setting ring cams the extra leaf into a stop position obstructing the residual aperture.

3,668,996

FLUID DISPENSING APPARATUS

Harold E. Peiffer, and Ralph A. Kohl, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 15, 1970, Ser. No. 80,856
Int. Cl. G03d 5/04
U.S. Cl. 95—89 R **12 Claims**



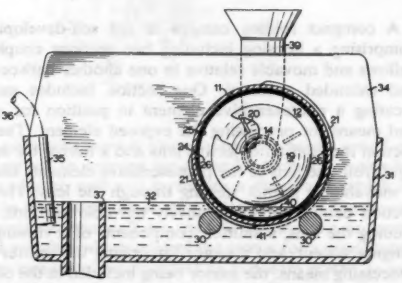
A device in which a disc member rotating at high speed expels a fluid or processing solution which is directed into a vortex generated by the disc member. The vortex causes the solution to be spread uniformly over a relatively wide area. With this manner of operation, the device is capable of operating with very small quantities of processing solutions. In another embodiment of the invention, a plurality of such dispensing devices can be arranged in a serial relationship so as to process or treat a moving strip of material in a continuous manner by subjecting the material successively to different types of processing solutions.

3,668,997

PROCESSING OF PHOTOGRAPHIC MATERIAL

Simon Ratowsky, Toronto, Ontario, Canada, assignor to William C. Jephcott, Toronto, Ontario; Jean M. Richard, Willowdale, Ontario and Ontario Development Corporation, Ontario, Canada

Filed Aug. 6, 1969, Ser. No. 848,042
Claims priority, application Great Britain, Aug. 10, 1968, 38,333/68
Int. Cl. G03d 3/04
U.S. Cl. 95—93 **28 Claims**



A method and apparatus for the processing of photographic material in which the material is mounted arcuately

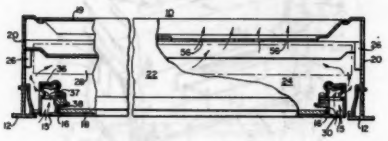
in a carrier which is horizontally disposed with respect to the axis of arcuation, charged in its lower portion with processing liquid, and moved about the axis of arcuation while at the same time the liquid is oscillated in a non-horizontal plane about a fulcrum to produce a wave form travelling back and forth in the liquid parallel to the axis of arcuation. A web mount may carry the photographic material in the carrier, preferably a web formed of polytetrafluoroethylene.

3,668,998

AIR RETURN SCOOP FOR AIR HANDLING LUMINAIRES

James C. Johnson, Arlington, Tex., and Winfried Neider-Westermann, Vicksburg, Miss., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 9, 1970, Ser. No. 9,563
Int. Cl. F21v *29/00*
U.S. Cl. 98—40 DL **2 Claims**



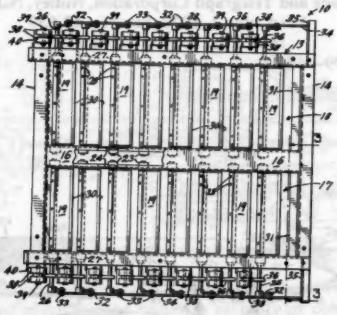
An air handling luminaire including a troffer and a light transmissive air handling door assembly which includes air return passages in opposite ends of the door assembly constructed and arranged to direct air returning through the passages away from the lamp cavity toward the side walls of the troffer housing to thereby completely exclude light from exiting from the fixture through the air return passages. The air return passages further having included therein a variably positioned dampening mechanism to control the volume of air returning through the air return passages.

3,668,999

FLUID BACK PRESSURE DAMPER

Raymond L. Alley, Toledo; George F. Hartman, Jr., Maumee, and John D. Ewald, Toledo, all of Ohio, assignors to The American Warming & Ventilating, Inc., Toledo, Ohio

Filed Sept. 21, 1970, Ser. No. 73,727
Int. Cl. F24f *13/14*
U.S. Cl. 98—110 **12 Claims**



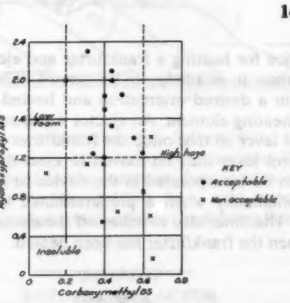
A fluid back pressure damper having at least one counterbalanced pivoted blade which is swung open by the flow of a gaseous fluid against the blade and, under normal conditions, which is swung closed by the mass of a counterweight when the gaseous flow ceases. The blade is mounted on a transverse shaft along a line spaced from its median line and is fabricated from flexible sheet material. The counterweight is connected to the blade shaft by means providing for relative angular movement between the blade and the counterweight. In normal closed position the blade closes against a stop or, when there is a plurality of blades in the damper, each blade closes against the adjacent blade and/or its shaft which thus functions as a stop. If and when a sudden back pressure occurs, the abrupt gaseous flow impinges on the blade. Because of the relative angular movement between the blade and the counterweight, the blade starts to move toward the closed position almost unhampered by the inertia of the counterweight. The blade swings closed, sharply striking its stop and flexes upon impact. Because the blade and the counterweight can move angularly relative to each other, the counterweight moves beyond its normal closed position in order to absorb at least a part of the kinetic energy of the counterweight. A shock absorbing means may be positioned in line to be impacted by the counterweight after passing its normal closed position in order to absorb any remaining kinetic energy of the counterweight.

3,669,000

CELLULOSE ETHER FOAM STABILIZERS FOR MALT BEVERAGES

Edward Segel, Chevy Chase, Md., and Kenneth G. Scheffel, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich. and Miles Laboratories, Inc., Elkhart, Ind., part interest to each

Filed Sept. 4, 1969, Ser. No. 855,275
Int. Cl. C12h *1/14*
U.S. Cl. 99—48 **14 Claims**



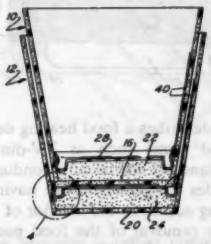
C_3–C_4 Hydroxyalkyl carboxymethyl cellulose ethers having a C_3–C_4 hydroxyalkyl MS of at least about 1.2 and a carboxymethyl DS of about 0.2–0.6 are superior cellulose ether foam stabilizers for carbonated malt beverages. They are compatible with chemical pasteurizing agents and can be used to improve the foam properties of beverages so treated.

3,669,001

CUP ASSEMBLY

Donald B. Asen, Bala Cynwyd, Pa., assignor to Bev Maid, Inc., Valley Forge, Pa.

Filed Apr. 22, 1970, Ser. No. 30,736
Int. Cl. A23l *1/00*; B65d *83/06, 79/00*
U.S. Cl. 99—78 **3 Claims**



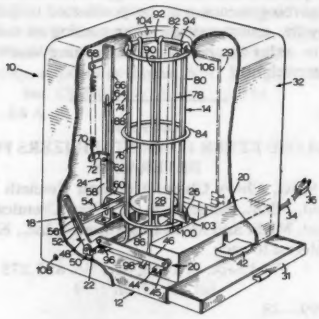
Tapered cups of foam polymeric material containing a comestible food product are provided with a cover cooperat-

ing with the interior surface of the cup. The cover has a rounded peripheral flange force-fit with the interior surface of the cup and a curved peripheral tip forming a secondary seal with the cup interior surface.

3,669,002
DEVICE FOR HEATING FRANKFURTERS AND THE LIKE

Brian Y. Davidson, 34 Pineway Boulevard, Willowdale, Ontario, Canada

Filed May 22, 1970, Ser. No. 39,734
Int. Cl. A47j 27/62
U.S. Cl. 99—327 **2 Claims**

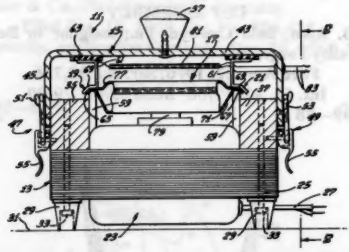


A device for heating a frankfurter and ejecting the frankfurter when it is ready to be served. The frankfurter is located in a desired orientation and heated by at least one electric heating element. An ejector mechanism is coupled to a control lever so that once the frankfurter has been heated, the control lever may be moved to eject the frankfurter. A timer can be incorporated in the device to activate the ejector automatically when a predetermined time interval has elapsed. The timer also switches off the electrical heating element when the frankfurter has been heated.

3,669,003
FOOD HEATING DEVICE

Leonard Tony King, 4109 Cedar Avenue, Long Beach, Calif.

Continuation-in-part of application Ser. No. 629,315, Apr. 7, 1967, now abandoned. This application June 22, 1970, Ser. No. 48,209
Int. Cl. A47j 27/62
U.S. Cl. 99—331 **11 Claims**

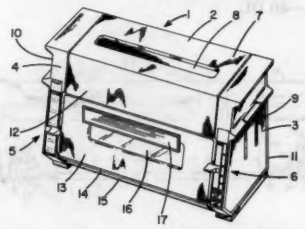


This disclosure describes a food heating device for heating and cooking food items such as TV-dinners which are prepackaged in standard electrically conductive containers. The device includes a rigid enclosure having a base and a cover for providing access to the interior of the enclosure to allow insertion or removal of the food package. The food package is supported on the base and, a step-down transformer supplies low voltage electrical power to the conductive food package. First and second clamps are supported by the enclosure means and clampingly engage first and second edge portions of the conductive food package, respectively, so that the electrical current passes directly through the food package and at least some of the food contained therein to rapidly and effectively heat the food.

3,669,004
TOASTER-OVEN

John L. Eaton, Jr., Delanco, N.J.; Kenneth L. Richard, Newton Square, and Walter M. Schwartz, Jr., Philadelphia, both of Pa., assignors to Proctor-Silex Incorporated, Philadelphia, Pa.

Filed Aug. 3, 1970, Ser. No. 60,468
Int. Cl. A47j 27/62
U.S. Cl. 99—331 **10 Claims**

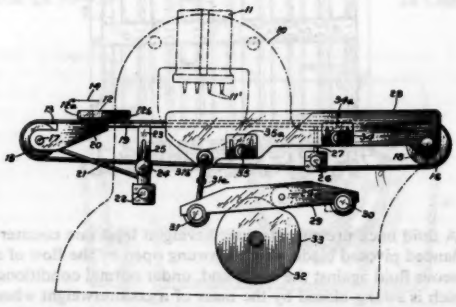


A toaster-oven comprising a plurality of readily releasable components including a chassis component, an end panel component and four heating element components. The chassis component comprises a common heating chamber which, having unique venting of the toasting thermostat, receives a vertically positioned, food supporting carriage movable therein in a toast mode from food receiving position to food toasting position and which receives a grill component in horizontal position movable therein in an oven mode from food receiving position to food cooking position. The heating element components are related to the reflecting surfaces of the common heating chamber so that, in conjunction with modulation of the power input to certain of the element components, effective cooking in both the toast and oven modes of operation is obtained. Thus, a readily serviceable and effective multipurpose appliance is disclosed.

3,669,005
CREAM FILLER APPARATUS

James Fullerton, Leonia, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed June 2, 1970, Ser. No. 42,639
Int. Cl. A21c 9/00; A23g 1/20
U.S. Cl. 99—450.1 **10 Claims**



A cream filler apparatus is provided for handling pans containing cake products which are to be filled with cream from

a common hopper by a cream injecting nozzles. The apparatus includes parallel conveying belts which move the pans to two waiting stops which are selectively activated, and the pan, when positioned, is raised by a lifting frame. The lifting frame is pivotally mounted at one end and intermittently moved by a lifter assembly under the control of a driven cam.

3,669,006

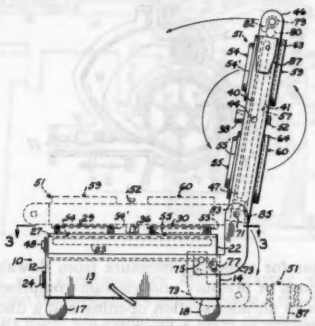
APPLIANCE FOR AND METHOD OF PASTRY MAKING

Maurice Wm. Lee, Sr., P.O. Box 25, Boley, Okla.

Filed Oct. 23, 1970, Ser. No. 83,549

Int. Cl. A21c *11/00*

U.S. Cl. 99—450.3 **4 Claims**



A hot plate type base, having a hingedly connected lid-like top frame or cover, is provided with pie dough and pie filling receptacles on the upper surface of the base. Heated plates, pivotally mounted by the top, are respectively provided with pie dough edge trimming and crimping dies and pie dough shaping dies in registering relation with respect to the receptacles on the base. The device forms a grill when the receptacles and dies are removed from the base and cover.

3,669,007

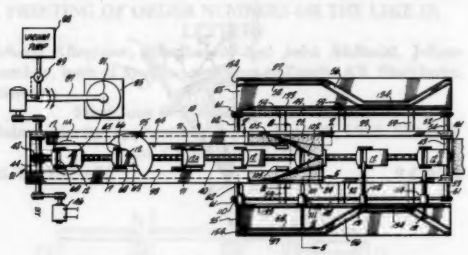
METHOD AND APPARATUS FOR ROLLING AND TUCKING FILLED FOODSTUFFS

Louis Pulici, 1202 Point View Street, Los Angeles, Calif.

Filed June 22, 1970, Ser. No. 47,951

Int. Cl. A23g *3/00*

U.S. Cl. 99—450.6 **20 Claims**



The method and apparatus take an outer food wrap or envelope and place it upon one of a plurality of continuously moving platens, each with a hinged section, upon a conveyor and processes each platen with its wrap beneath an automatic filler tank. The hinged portion of the platen is then folded to make a first transverse fold in the wrap about the filler, and then the wrap is engaged with opposed reciprocating transverse forks which roll the filled wrap upon itself about a line transverse to the conveyor travel. The rolled foodstuff is then sprayed with a binder liquid and passed between compression belts which compress the outer wrap edge to the first outer roll layer.

Foodstuffs which are tucked as well as rolled may, after the first partial fold is made, be passed between converging guides which plow the longitudinal edges of the wrap upwardly and inwardly to form side tucks which then are also rolled with the body of the wrap and filler by the method and apparatus described above. Preferably the engaging forks are caused to rotate by a gear and rack arrangement which supports the forks on opposite sides of the conveyor such that they may be cammed toward and away from the conveyor platens.

3,669,008

METHOD FOR PREVENTING THE DEFORMATION OF FOLDED NEWSPAPERS, MAGAZINES ETC. DURING THE TRANSPORT THEREOF IN FLAKELIKE SUPERPOSED STACKS

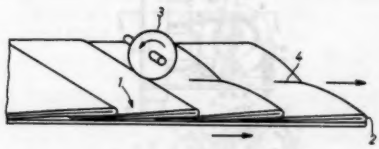
Walter Reist, Hinwil, Zurich, Switzerland, assignor to Ferag, Fehr & Reist A.G., Hinwil, Zurich, Switzerland

Filed June 11, 1970, Ser. No. 45,397

Claims priority, application Austria, June 11, 1969, A 5529/69

Int. Cl. B30b *13/00*

U.S. Cl. 100—35 **4 Claims**



A method for preventing the deformation of folded newspapers, magazines etc. during the transport thereof in flakelike superposed stacks comprises forming one or several stiffening scores on the folding line, said scores being preferably arranged perpendicular to the folding line.

3,669,009

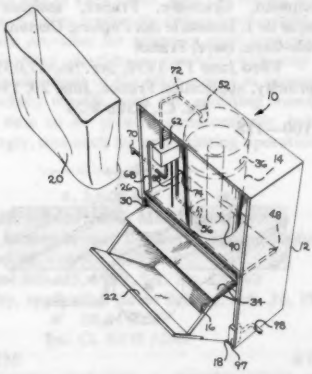
REFUSE COMPACTOR

Thomas H. Pratt, RFD No. 1, Concord, N.H., and Michael L. Rieger, Box 337, Palmer, Alaska

Filed Nov. 30, 1970, Ser. No. 93,563

Int. Cl. B30b *15/16*

U.S. Cl. 100—52 **1 Claim**



This invention provides a refuse compactor which compresses household trash and garbage into odor and moisture-

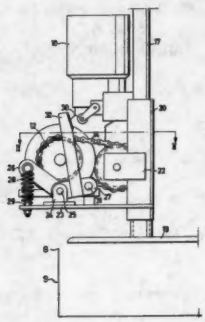
proof bags and seals the bags to prevent re-expansion or leakage. This device utilizes hydraulic pressure from a home water pressure system to actuate a double-action piston which is controlled by means of a four-way valve. The double-action piston is connected to actuate a compression plate to compact the trash and garbage into the bag within a compaction chamber and to retract the compression plate to thereby allow the user to remove the compacted load. The compaction chamber is hinged to tilt outwardly to allow removal of the bag filled with the compressed trash and garbage.

3,669,010

IMPROVEMENTS IN GARBAGE COMPACTORS

Gunnar Arne Leonard Lundgren, Lindesholm, Brottby, Sweden, assignor to Komprimator AB, Vallentuna, Sweden

Filed Apr. 8, 1969, Ser. No. 814,329
Claims priority, application Sweden, Apr. 11, 1968, 4953/68
Int. Cl. B30b *15/18*
U.S. Cl. 100—52 **6 Claims**



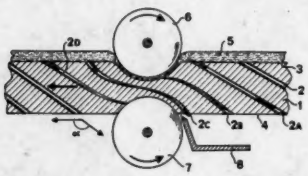
In a garbage compactor for compressing refuse and other waste material in open containers by a vertically operating device comprising a piston and a piston rod driven by an electric motor by a transmission means, a means activated by compression forces exerted against the downward movement of the piston to automatically return the piston to an inactive position above the upper edge portion of the container by a change in the direction of rotation of the electric motor.

3,669,011

METHOD OF AND APPARATUS FOR CONTINUOUS EXTRACTION OF LIQUID FROM A PASTY SUSPENSION

Guy Jacquelin, Grenoble, France, assignor to Centre Technique de L'Industrie des Papiers, Cartons et Celluloses, Grenoble-Gare, Isere, France

Filed June 17, 1970, Ser. No. 47,037
Claims priority, application France, June 20, 1969, 6920821
Int. Cl. B30b *9/24*
U.S. Cl. 100—118 **4 Claims**



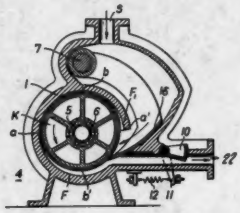
A device for the continuous extraction of a liquid from a pasty suspension arranged in a layer on a support strip comprising elastically deformable permeable zones separated by impermeable zones, the permeable zones putting into communication with each other the two faces of the strip are each subjected to a progressive contraction moving from the face in contact with the suspension towards the free face of the support. The compression pressure is obtained by passing the suspension-strip combination between press cylinders.

3,669,012

APPARATUS FOR REMOVING MOISTURE

Franz P. Nebel, Muhlberg 11, A 5132 Geretsberg, Austria

Filed May 19, 1970, Ser. No. 38,846
Claims priority, application Austria, Apr. 8, 1970, 3189/70
Int. Cl. B30b *9/20*
U.S. Cl. 100—121 **9 Claims**



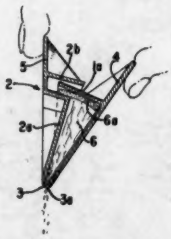
Apparatus for removing moisture from flowable material by the actions of pressure and vacuum comprises a housing provided with an inlet suction opening and a discharge conduit, a hollow piston rotatably mounted in said housing and having a liquid-permeable shell, said piston is oval in cross-section and defines within said piston a cavity and with said housing a handling chamber having a suction end and a discharge end, a backed gate mounted in said housing, a mechanism positively maintaining said gate in sealing contact with said shell between said discharge and suction ends, a vacuum pump and a liquid pump connected to said cavity, and an adjustable throttle valve controlling the cross-section of said discharge conduit.

3,669,013

CITRUS FRUIT SQUEEZER

Jacob Stein, 210 East Broadway, New York, N.Y.

Filed June 19, 1970, Ser. No. 47,737
Int. Cl. B30b *5/02*
U.S. Cl. 100—211 **2 Claims**



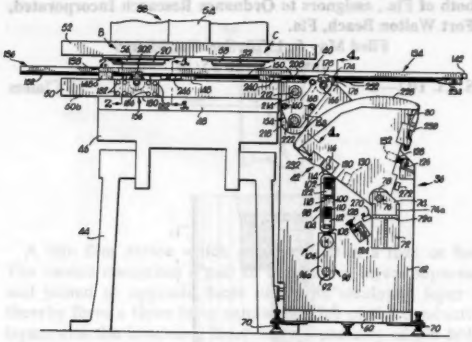
A disposable one piece plastic container for a cut piece of citrus fruit which comprises a hinge member integrally connecting two semi-circular parts, each having a semi-circular rim around the outer semi-circular portion thereof, one of said parts having a semi-circular raised portion with walls parallel to one of said semi-circular rims to enter the cut piece of fruit inside the rind, the semi-circular rim on the other semi-circular part, entering the channel formed between said parallel parts to prevent backflow of the fruit juice, and an opening in said plastic hinge member.

3,669,014

MEANS INCLUDING TWO DIE SETS FOR EMBOSSING AND APPLYING FOIL TO A SHEET

Eugene S. Spaw, Leawood; Paul F. McGrath, Prairie Village, both of Kans., and Stanley W. Otto, Platte City, Mo., assignors to Hallmark Cards, Incorporated, Kansas City, Mo.

Filed Aug. 29, 1969, Ser. No. 854,105
Int. Cl. B41k 3/14; B44b 5/00; B41c 1/08
U.S. Cl. 101—3 R 11 Claims



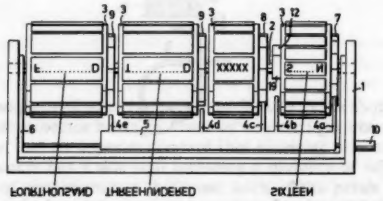
A method and apparatus for dry engraving sheets of material wherein the method includes holding a sheet fixed in a first position while die stamping a layer of decorative foil thereon to present a specific design, shifting the sheet to a second position in alignment with an embossing die while retaining control over the sheet during shifting thereof, and holding the sheet fixed in the second position while embossing the sheet to form raised areas thereon underlying the foil design impression in exact registration therewith to simulate an engraved design. The apparatus includes a pair of side-by-side, oppositely reciprocable shuttle bars each having a series of vacuum ports therein which communicate with a vacuum source in timed relationship to the reciprocation of the respective bars. The shuttle bars thereby alternately shift new sheets into position for processing and cooperate to simultaneously hold fixed one sheet for foil design stamping thereof and another sheet for strategic area embossing thereof.

3,669,015

NUMBERING MECHANISM FOR AUTOMATIC PRINTING OF ORDER NUMBERS OR THE LIKE IN LETTERS

Richard Klingspor, Bandhagen, and John Alebrant, Johanneshov, both of Sweden, assignors to Esselte AB, Stockholm, Sweden

Filed June 27, 1969, Ser. No. 837,192
Claims priority, application Sweden, June 27, 1968, 8811/68
Int. Cl. B41j 1/22, 1/60
U.S. Cl. 101—76 9 Claims



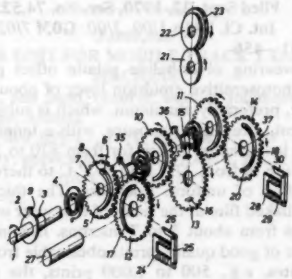
A numbering mechanism for automatic printing of counterfeit-protecting statements of order numbers and the like in letter-written form on value prints, distinguished by comprising number wheels carrying on their periphery the respective numbers in letters, the first or units number wheel over the numerals in the series "one" to "nine" also carrying the numerals in the series "10" to "9" i.e. in total 19 numerals, while the 10s number wheel is provided with the eight numerals in the series "20" to "90" and a ninth numeral-free position at its periphery, said position preferably being filled by a counterfeit-protecting block or screen, all number wheels furthermore carrying a 10th numeral-free position at their periphery, said position also preferably being filled by a counterfeit-protecting block or screen.

3,669,016

SELECTIVE PRINTER INCLUDING SETTABLE, RESILIENTLY DRIVEN TYPE WHEELS

Hermann Kittel, Stockheimer Str. 16, 6 Frankfurt am Main, Germany

Filed Apr. 15, 1970, Ser. No. 28,621
Claims priority, application Germany, Apr. 17, 1969, P 19 19 404.8
Int. Cl. B41j 7/48, 5/44
U.S. Cl. 101—93 C 6 Claims



Apparatus is provided for printing available coded data having type wheels individually arrestable in a printing position and resiliently connected to a drive shaft through springs. Idler means are provided for each type wheel and each idler means if firmly coupled with its respective type wheel and resiliently driven by a shaft. Means including at least two locking wheels are positioned independently of each idler means and of each other, with the means including the locking wheels being resiliently driven by the shaft. In addition, means are provided for arresting each locking wheel, with each said locking wheel being provided with stop means for avoiding advancement of the idler means as compared to each of the locking wheels, with the arresting means controlled by the data to be printed consecutively, being engaged alternatingly, one each for one printing operation.

3,669,017

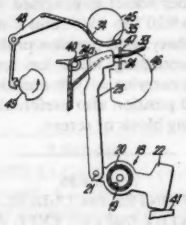
SHEET SENSING MECHANISM

Albert George Ronald Gates, London, England, assignor to Gestetner Limited, London, England

Filed Feb. 25, 1970, Ser. No. 13,962
Claims priority, application Great Britain, Feb. 26, 1969, 10,419/69
Int. Cl. B41f 13/40
U.S. Cl. 101—235 8 Claims

Printing apparatus including a movable sheet sensing member cooperable with a driven slotted sheet deflector member so that a passing sheet in contact with said deflector member will cover the slot and cause the sensing member to

be urged into a sheet present position to disenable the pressure roller raising mechanism. Absence of a sheet permits the



sensing member to enter the slot and thereby remain in a sheet absent position.

3,669,018

LONG-WEARING SILVER-HALIDE GELATIN OFFSET PRINTING PLATE

Charles E. Wheelock, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 22, 1970, Ser. No. 74,523
Int. Cl. B41n *1/00, 3/00;* **G03f** *7/02*
U.S. Cl. 101—456 **7 Claims**

A long-wearing silver-halide gelatin offset printing plate having a photosensitive emulsion layer of about 3 mils on a metal base, preferably aluminum, which is subjected to long development, after light exposure, with a tanning developer and which is thereafter baked for from 520 to 30 seconds at a temperature of from 275° C to 375° C to thereby achieve a hardened film of uniform thickness. The thickness of the hardened, baked film at the point of first wear on the printing plate varies from about 3 to 7 microns. In comparison with the number of good quality prints obtainable from heretofore known plates, e.g., 500 to 1,000 prints, the present plate gives from 20,000 to 500,000 good quality prints.

3,669,019

DUAL PURPOSE HECTOGRAPHIC MASTER UNIT

Victor Barouh, Westbury, L. I.; Robert Glenn, Forest Hills, both of N.Y., and Louis Rose, Livingston, N.J., assignors to Eaton Allen Corp., Brooklyn, N.Y., by said Rose

Filed Nov. 3, 1969, Ser. No. 873,576
Int. Cl. B41m *5/16, 5/18*
U.S. Cl. 101—470 **1 Claim**

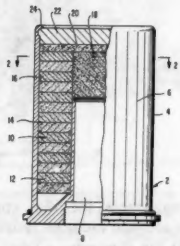
A master unit for hectographic duplication comprising a folder including a top sheet joined to a bottom sheet forming a file. A transfer sheet is reversibly disposed between the top sheet and the bottom sheet and has a coating on one side thereof of a pressure and heat sensitive pigmented transfer material. The top sheet is of a relatively light weight heat transferable paper for receiving a thermographically reproduced hectographic mirror image thereon. The bottom sheet is a relatively heavy weight paper for receiving a pressure reproduced hectographic mirror image of pressure formed markings on the bottom sheet.

3,669,020

FIREBOMB IGNITER DEVICES AND COMPONENTS THEREFOR

Hal R. Waite, Fort Walton Beach, and Carl F. Lucy, Niceville, both of Fla., assignors to Ordnance Research Incorporated, Fort Walton Beach, Fla.

Filed May 6, 1970, Ser. No. 35,019
Int. Cl. F42b *25/14*
U.S. Cl. 102—6 **5 Claims**



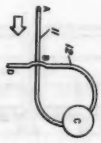
Firebomb igniter devices designed to spread hundreds of burning particles over wide areas are constructed from a stack of ring-shaped wafers encased in a canister surrounding an explosive fuse unit. The wafers are compression molded powder mixtures of combustible metal and fluoroalkylene polymer, e.g., magnesium metal and polytetrafluoroethylene compacted to about 70 to 95 percent of ultimate density. Upon detonation of the igniter device, the wafers break into hundreds of small particles that disseminate to distances of 100 feet or more and burn for several seconds providing ignition points for areas of fuel concentration within a firebomb pattern.

3,669,021

MILD DETONATING FUSE LOGIC COMPONENTS

John H. Spencer, Fredericksburg; Richard T. Ramsey, Dahlgren, and Warren L. Gilbertson, Fredericksburg, all of Va., assignors to The United States of America as represented by the Secretary of the Navy

Filed Aug. 27, 1969, Ser. No. 854,812
Int. Cl. F42c *15/00;* **F42d** *1/04*
U.S. Cl. 102—22 **15 Claims**



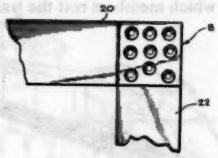
Mild detonating fuse is used to construct explosive circuit elements. Specifically, a non-destructive explosive crossover, two explosive diodes, an explosive gate, an explosive switch, and two explosive Y junctions are disclosed.

3,669,022

THIN FILM DEVICE

Carl James Dahn, Evanston, and Anthony P. Van Den Heuvel, Homewood, both of Ill., assignors to IIT Research Institute, Chicago, Ill.

Filed Aug. 5, 1970, Ser. No. 61,266
Int. Cl. F42b 3/12
U.S. Cl. 102—28 EB 5 Claims



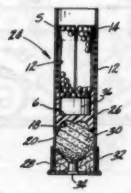
A thin film device which may be used as a fuze or fuse. The device comprises a pair of conductive layers separated and joined to opposite faces of a thin insulating layer to thereby form a three layer sandwich. One of the conductive layers and the insulating layer have a plurality of pin holes therein, the sides of each being coated by a bridge element of low density, low specific heat metal so as to short circuit or bridge the conductive layers. Terminal means are connected respectively to the conductive layers to supply electrical energy which passes from one conductive layer to the other conductive layer via the metal bridge elements. When the electrical energy exceeds a predetermined amount, the bridge elements vaporize. The vaporization of the bridge elements can be employed to initiate detonation of an explosive train thereby serving as a fuze. Alternatively, the device may be employed as an electrical fuse wherein the vaporization of the bridge elements caused by electrical energy interrupts the flow of electrical energy in an electrical circuit.

3,669,023

SHOT PROTECTOR

Vernon C. Moehlman, and Robert J. Klein, both of Florissant, Mo., assignors to Olin Mathieson Chemical Corporation

Filed July 1, 1969, Ser. No. 838,069
Int. Cl. F42b 7/08
U.S. Cl. 102—42 C 8 Claims



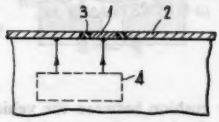
A one piece plastic shot protector for use with a shot shell, the shot protector having a lower or rearward gas obturating portion, and an upper or forward shot-receiving pocket. The shot pocket has a side wall including a plurality of adjacent petals of predetermined thickness, each of the petals being joined to the pedal next adjacent thereto by a thin web of plastic, and the terminal forward portion of each petal being outwardly flared. Wad retaining means may be included in the shot pocket.

3,669,024

SIGNAL GENERATING APPARATUS

Robin John Davies, Lenham, near Maidstone, and William Kenneth Capewell, Maidstone, both of England, assignors to Elliott Brothers (London) Limited, London, England

Filed Mar. 11, 1970, Ser. No. 18,518
Int. Cl. F42b 5/08
U.S. Cl. 102—70.2 R 4 Claims



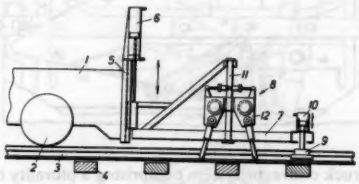
A missile fuze arrangement in which a change in capacitive coupling between two mutually insulated conductive areas on the missile skin, arising from contact of one of those areas with a target body, results in a change in alternating current flow through that coupling from a generator to a load, the change in current flow providing an output signal to detonate the warhead of the missile.

3,669,025

TAMPER UNIT FOR MOBILE TRACK TAMPING MACHINE

Franz Plasser, and Josef Theurer, both of Johannesgasse 3 A-1010, Vienna, Austria

Filed July 17, 1970, Ser. No. 55,786
Claims priority, application Austria, Aug. 8, 1969, A 7689/69
Int. Cl. E01b 27/16
U.S. Cl. 104—12 12 Claims



A structural tamper unit is vertically movably mounted on a mobile track tamping machine. The tamping tool carrier is pivotal in a plane parallel to the track, and a hydraulicaLly operated drive means for vibrating the tamping tool carrier is mounted directly on the carrier.

3,669,026

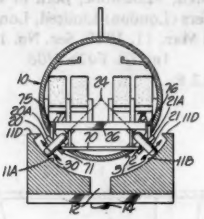
TRANSPORTATION SYSTEM

Gunnar Mouritzen, San Diego, Calif., assignor to Geoscience Limited

Continuation-in-part of application Ser. No. 717,610, Apr. 1, 1968, now abandoned. This application May 18, 1970, Ser. No. 37,978
Int. Cl. B61b 13/04
U.S. Cl. 104—118 7 Claims

A transportation system uses a curved trackway in the nature of a trough and a special vehicle having wheels engaging the trough such that in making turns the wheels may move such that the center of gravity may be displaced to compensate for centrifugal forces. Aerodynamic wings may be on the

vehicle to develop lift forces and take weight off the wheels and the vehicle may be contoured to the shape of the trough



to provide an air cushion between the vehicle and track at high speeds. The wheels may be extended so that the vehicle may also travel over level terrain.

3,669,027

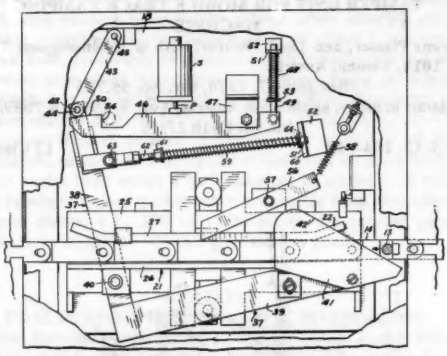
TOW TRUCK CONVEYOR SYSTEM

Robert Haase, Troy, and Karl R. M. Karlstrom, Roseville, both of Mich., assignors to American Chain & Cable Company, Inc., New York, N.Y.

Filed Jan. 23, 1970, Ser. No. 5,234

Int. Cl. B65g *17/42*

U.S. Cl. 104—172 BT **18 Claims**



A low truck conveyor system comprising a plurality of tow trucks movable along a floor having a slot therein. A conveyor is driven within the floor beneath the slot and has driving means thereon for engaging a tow pin on the tow truck to move the tow truck along. A track is provided for the conveyor and a portion of the track is adapted to be moved laterally to cause the tow pin to engage a cam portion for camming the tow pin upwardly and out of engagement with the driving means on the conveyor.

3,669,028

RAILWAY TRAIN FLUID SUSPENSION

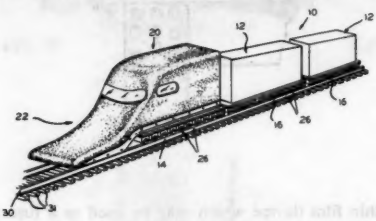
Ivan L. Joy, 1616 West 29th Street, Topeka, Kans.

Original application Feb. 19, 1969, Ser. No. 800,498, now Patent No. 3,557,707. Divided and this application June 3, 1970, Ser. No. 54,032

Int. Cl. B61f *1/02, 3/16, 5/10*

U.S. Cl. 105—157 R **4 Claims**

The disclosure relates to a high speed one car railroad vehicle that can be 500 to 2,000 feet long and is in the form of a millepede like running gear with multiple sets of closely spaced wheels and carrying load support platforms or decks for freight or the like, in which the running gear extends the length of the train and comprises a continuous center sill structure that is sufficiently flexible horizontally to accommodate curves and includes closely spaced wheel modules, each of which is provided with a pair of small diameter wheels that ride on the respective track rails, with the wheel modules being spaced so that the wheels are disposed every four feet on either side of the train. The center sill structure is suspended from the wheels by individual knee action suspensions connecting the wheels to the center sill structure, and where the vehicle is self-propelled, each wheel is individually driven by its own motor, with 100 per cent dynamic braking being employed. The wheel modules also each include a cross bearer or beam plate member that overlies the wheels thereof, on which members rest the train load support



decks that are in the form of freight container receiving deck plates. The deck plates are sprung on the wheels underlying the same by employing an elongate fluid tube spring on either side of the center sill for each deck plate. The respective fluid tube springs extend the length of the respective deck plates, and each deck plate is supported only by its underlying fluid tube springs, which are interposed between the respective wheel suspensions and the cross bearers. The individual decks are pivotally connected to the center sill adjacent either end of same and rest of rollers mounted on the respective cross bearers that are oriented so that the center sill may readily shift laterally of the respective decks as required to smoothly round curves in the track.

3,669,029

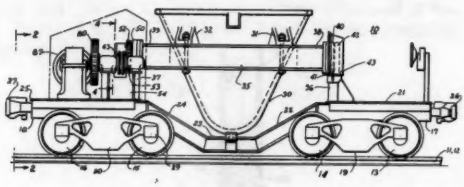
ROTATABLE HOT METAL DISCHARGING CAR

Norman Lesk, Mamaroneck, and Mitchel Kleinman, Brooklyn, both of N.Y., assignors to Treadwell Corporation, New York, N.Y.

Filed Nov. 4, 1970, Ser. No. 86,894

Int. Cl. B61d *3/16, 5/04, 9/02*

U.S. Cl. 105—265 **4 Claims**



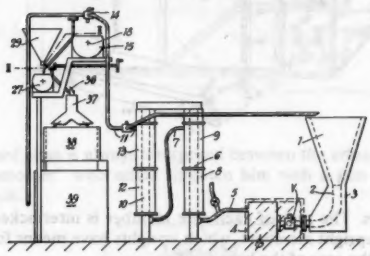
A novel form of dumping mechanism for dumping vessel cars used to convey molten metals, which comprises a ladle, a bale, and a frame for supporting said ladle and bale in position for pouring the metal, the frame constituting a body of a railroad car mounted on standard trucks, and means for dumping the contents of the ladle comprising a rack, wheel, and pinion structure engaging the bale at either end thereof, and a drive mechanism for the bale consisting of a continuous pull chain connected to a collar at one end of the bale, said pull chain being engaged by sprockets driven by a motor so that by electrically driving the same, the bale can be moved in engagement with the rack and tilted.

3,669,030

MANUFACTURE OF TOFFEE AND SIMILAR PRODUCTS

Peter Donald Waters, Hayes, England, assignor to Callard & Bowser Limited, London, England

Filed Mar. 17, 1970, Ser. No. 20,333
Claims priority, application Great Britain, Mar. 20, 1969, 14,695/69
Int. Cl. A21d *8/00*; A23p *1/00*
U.S. Cl. 99—138 17 Claims



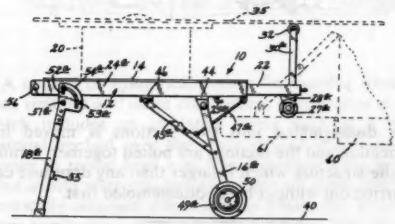
A continuous process for manufacturing toffee is provided in which all the various stages of the traditional batch process of toffee-making are reproduced. An effective agitation of the sugar mixture in the second or cooking stage of the process is achieved by stirring the mixture and scraping it from the inner surfaces of the container using a stirrer-scraper which has no central axial shaft. Preferably the stirrer-scraper effects a major agitation of the sugar mixture in the cooking stage of the process by the provision of adjacent sections of helical blades, there being in each section an inner and an outer helical blade which are arranged to impart movement to the sugar mixture in opposite directions within each section.

3,669,031

PORTABLE COLLAPSIBLE WORK TABLE

Willie E. Cole, Ryder, N. Dak.

Filed Aug. 12, 1970, Ser. No. 63,103
Int. Cl. A47b *31/04*
U.S. Cl. 108—50 7 Claims



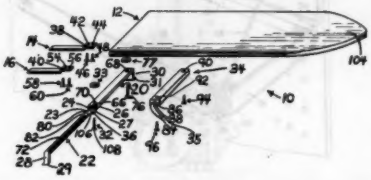
A work table for carrying tools thereon (e.g. a power saw) which is rollably transportable between different locations and collapsible in a manner which facilitates loading of the work table onto the the bed of a truck. The legs of the work table are pivotally attached thereto and moveable between an upright position and a collapsed horizontal position generally beneath the horizontal top surface of the work table. A first pair of casters are attached to the front legs of the table and a second pair of casters are attached to a frame extension member which is movable between a coplanar position substantially beneath the top surface and a position extending horizontally outward from an end thereof; the first and second pairs of casters being generally coplanar when the work table is in its collapsed position so as to allow rollable movement of the carrier on the first and second pairs of casters.

3,669,032

LEGLESS IRONING BOARD

Leoda J. Gooderum, 627 Charles Street, La Crosse, Wis.

Filed Feb. 24, 1970, Ser. No. 13,426
Int. Cl. A47b *57/00*
U.S. Cl. 108—97 5 Claims



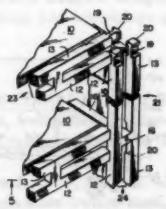
An ironing board for pressing garments. A legless device with fastening elements to provide mounting of the ironing board atop a drawer or atop a bread board of a cabinet.

3,669,033

MODULAR SHELVING AND FURNITURE

Alfonso Murcia, 160-12 Highland Avenue, New York, N.Y.

Filed May 7, 1970, Ser. No. 35,332
Int. Cl. A47b *3/00*
U.S. Cl. 108—111 5 Claims



The invention is directed to a modular type of construction for expansible tables and shelving, the construction being formed solely from a plurality of identical units wherein each of said units may be easily, quickly and individually engaged and removed for attaining and altering the surface capacity of said tables and shelving.

3,669,034

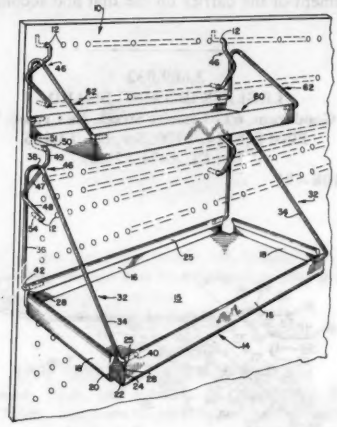
SHELF DETACHABLY SECURED TO AN APERTURED BOARD TO FORM A DISPLAY UNIT

Howard J. Marschak, 865 W. North Avenue, Evanston, Ill.

Filed Apr. 23, 1970, Ser. No. 31,146
Int. Cl. A47b *5/00*
U.S. Cl. 108—152 3 Claims

A shelf or tray detachably secured to a conventional apertured board, such as a pegboard, to form a display unit. The shelf or tray is secured by means of a pair of wire brackets having hooking segments or hooking members, which

brackets are detachably secured to the shelf or tray and the hooking segments are detachably peg-hooked into the



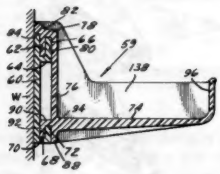
openings in the apertured board so as to engage the apertured board to prevent lateral movement and sway of the brackets and also prevent inadvertent disassembly.

3,669,035

EXTRUDED SHELVING AND EXTRUDED SUPPORT MEANS THEREFOR

Milton J. Grossman, 10296 South Mina Avenue, Whittier, Calif.

Filed Dec. 15, 1969, Ser. No. 887,265
Int. Cl. A47b *5/00*
U.S. Cl. 108—152 **5 Claims**



Integral, extruded shelf structures, and integral, extruded supporting means or rails therefor, the shelf structure having a horizontal article supporting shelf or shelf part, a longitudinally extending brace or brace means, and at least one depending, longitudinally extending flange at the rear thereof. The rail is adapted to be attached to a wall or other support, and said rail has an upwardly opening longitudinally extending groove for removable reception of the flange of the shelf structure.

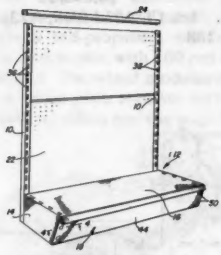
3,669,036

BASE FOR A DISPLAY RACK

Howard J. Marschak, 865 W. North Avenue, Evanston, Ill.

Filed Sept. 9, 1970, Ser. No. 70,799
Int. Cl. A47b *3/06*
U.S. Cl. 108—153 **6 Claims**

A base for a display rack which may be shipped disassembled and may be readily assembled and interlocked without the use of any tools, bolts, nuts or extraneous fastening elements. Said base comprises spaced side members and a front kick-plate having means for self-interlocking with said side members, and a base shelf for self-interlocking with said side



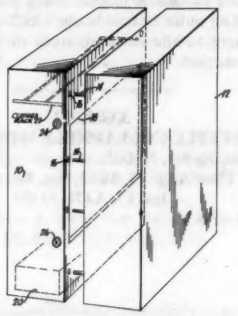
members. The rear of each side member is interlocked with spaced upright members, which uprights have means for supporting the rear of the base shelf.

3,669,037

PROPERTY SAFE

Joseph Rossel, 253 - 10th Avenue, New York, N.Y.

Filed Nov. 10, 1970, Ser. No. 88,274
Int. Cl. E05g *1/00;* **A47b** *45/00*
U.S. Cl. 109—49 **2 Claims**



A safe disassembled into two sections is moved into desired location and the sections are bolted together, forming a composite structure which is larger than any door and cannot be carried out without being disassembled first.

3,669,038

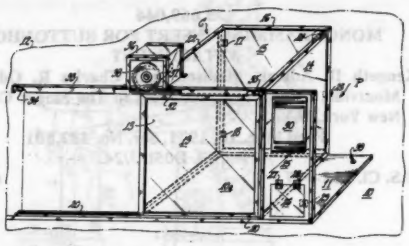
ORDER TRANSFER ASSEMBLY FOR PREVENTING HOLDUPS

Frank G. Watson, 1708 North Grandee Avenue, Compton, Calif.

Filed Aug. 11, 1969, Ser. No. 849,091
Int. Cl. E06b *7/00*
U.S. Cl. 109—12 **1 Claim**

A transparent, order delivery chamber disposed at counter height, between customer and attendant, with a door adjacent each of them. The customer's door is opened by the attendant, by remote operation of a reversible electric motor,

only after he has placed the requested order in the chamber from his side and secured his door. An adjacent passage allows prior payment and change making. Thus a pane of bul-



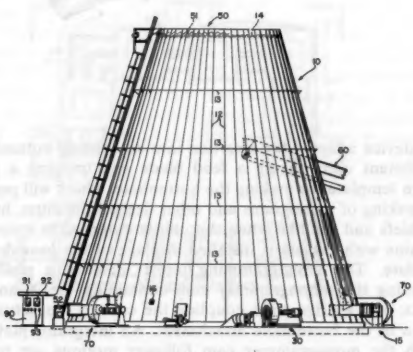
letproof glass is always interposed between the attendant and a "customer" who might threaten him with a gun or other weapon.

3,669,039

REFUSE BURNER FOR WOOD WASTE, BARK RESIDUES, AND OTHER COMBUSTIBLE SOLIDS

Marvin J. Leman, Shelton, Wash., assignor to Simpson Timber Company, Seattle, Wash.

Filed Aug. 27, 1970, Ser. No. 67,522
Int. Cl. F23g 7/02
U.S. Cl. 110—7 A **9 Claims**



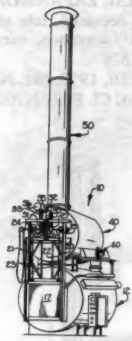
A conical or cylindrical burner for burning wood wastes, bark residues and other combustible solid wastes is disclosed which includes an insulating lining such as a refractory material applied over the inner surface of the shell of the burner to retard heat loss. The insulating liner may be applied in situ after erection of the burner shell. Rows of concentrically arranged grates provide means for delivering primary combustion air to the burning zone. The overfire and recirculation air system includes means to supply ambient and/or hot recirculating gases in a predetermined ratio to keep the burner temperature within a predetermined range. A temperature sensing means located near the exhaust opening at the top of the burner is operatively connected to a controller which automatically adjusts interconnected dampers in the ambient air and hot recirculating gas inlets of the overfire and recirculation air system to a ratio of ambient air to recirculated hot gases to maintain the burner temperature essentially constant even with variable fuel feed to the burner. The refuse burner is capable of combusting wood and bark residues efficiently with significantly reduced visible smoke and particulate matter.

3,669,040

ACCESS DOOR CONTROL APPARATUS FOR CONTROLLED EMISSION INCINERATOR

Richard F. Clements, Charlotte, N.C., assignor to Environmental Control Products, Inc., Charlotte, N.C.

Filed Jan. 25, 1971, Ser. No. 109,387
Int. Cl. F23g 5/12
U.S. Cl. 110—8 A **7 Claims**



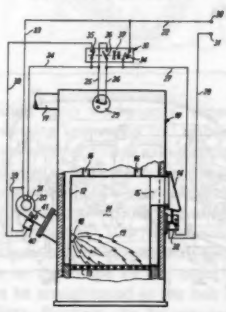
The improvement, in a controlled emission incinerator apparatus having a main combustion chamber including an access door mounted for movement between an open position for loading of material and a closed position for burning of the material loaded and an independent secondary combustion chamber for burning the products of incomplete combustion from the main combustion chamber, of apparatus for preventing undesirable emissions from the incinerator resulting if material for burning is loaded into the incinerator when the temperatures in both the combustion chambers are not in the desired range. The apparatus comprises devices independently responsive to temperatures within both combustion chambers for selectively allowing movement of the access door from the closed position to the open position only when desired temperature ranges are present in both the main and secondary combustion chambers.

3,669,041

DOUBLE COMBUSTION FIRING

Emil Schworer, Vilters, Switzerland, assignor to Apparatebau Aktiengesellschaft, Trubbach, St. G. in Trubbach, Switzerland

Filed June 1, 1970, Ser. No. 42,066
Claims priority, application Switzerland, May 29, 1969, 8114/69
Int. Cl. F23g 5/12
U.S. Cl. 110—18 **5 Claims**



A double combustion firing for solid and gaseous liquid fuels having a single fire chamber with a burner nozzle

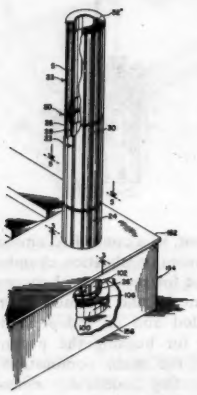
directed downwards toward a grate for the support of the solid fuels and having a feed opening for the solid fuels and means connected to the burner for switching on and off from a control circuit operable by the door in the chamber with a control circuit for the burner connected so that when the door of the fire chamber is open the burner will be shut off.

3,669,042

SECTIONALIZED STACK WITH CIRCUMFERENTIAL AND RADIAL EXPANSION MEANS

Richard E. Lawrence, deceased, late of 22 Glenwood Road, Roslyn, N.Y. (Eileen Lawrence, executrix) 22 Glenwood Road, Roslyn, N.Y. 11576

Filed Apr. 10, 1970, Ser. No. 27,355
Int. Cl. F23j *11/00*
U.S. Cl. 110—184 **8 Claims**



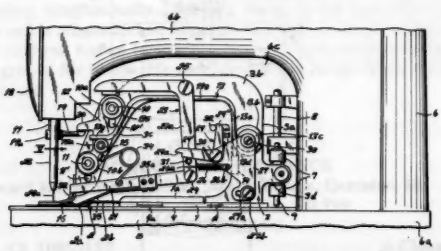
A smokestack has axially aligned tubular sections. Each section has concentric inner and outer walls. Accordion-like circumferential flanges on the inner wall of each section permit relative axial expansion and contraction of the walls. Other accordion-like circumferential flanges between the inner and outer walls permit relative radial and circumferential expansion and contraction of the walls. Dynamic vibration absorbers are provided at the base of the smokestack. The sections are reinforced by flexible internal braces located in the air space between the inner and outer walls, and secured to the circumferential flanges.

3,669,043

SEWING MACHINE FOR THE FORMATION OF A RECTANGULAR STITCH PATTERN

Karl Nicolay, Bielefeld, Germany

Filed Nov. 4, 1970, Ser. No. 86,836
Claims priority, application Germany, Nov. 6, 1969, P 19 55 796.1
Int. Cl. D05b *3/12*
U.S. Cl. 112—76 **10 Claims**



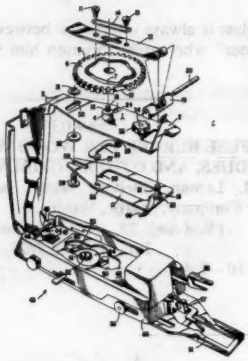
A sewing machine for the formation of an endless stitch pattern has a two-part clamping frame including an outer main frame and an inner clamp member along the closing side of the pattern. Means are provided for horizontally displacing the auxiliary clamp member to clear the stitching line upon closure of the pattern.

3,669,044

MONOGRAMMING INSERT FOR BUTTONHOLE ATTACHMENT

Kenneth D. Adams, Madison, and Charles R. Odermann, Montville, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed Mar. 10, 1971, Ser. No. 122,801
Int. Cl. D05b *3/24*
U.S. Cl. 112—77 **6 Claims**



A device adapted for insertion into an existing buttonhole attachment unit, having a feed blade and utilizing a gear driven template for making the buttonhole, which will permit the making of monograms and other designs on shirts, handkerchiefs and the like when the unit is mounted in a sewing machine with the insert installed in place of the gear driven template. The monogramming insert includes a platform mounting the monogrammer cam containing the X and Y tracks, and a drive train coupling the cam to the actuating pinion of the buttonhole attachment. An integrator plate to which the monogrammer cam follower motions are transferred couples to integrated motions to the feed blade of the buttonhole attachment, thereby causing motion of the work engaging foot of the attachment as required for the making of the monogram or the design.

3,669,045

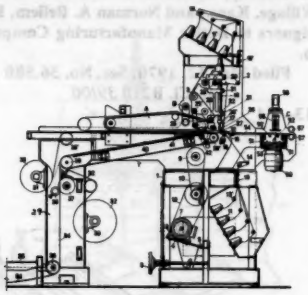
MULTINEEDLE QUILTING MACHINE FOR THE MANUFACTURE OF PADDED UPHOLSTERY

Giannino Landoni, 133 Via Verdi, 21012 Cassano Magnago, Italy

Filed July 16, 1970, Ser. No. 55,381
Claims priority, application Italy, July 19, 1969, 19857 A/69
Int. Cl. D05b *11/00, 35/00*
U.S. Cl. 112—118 **7 Claims**

A multineedle quilting machine for manufacturing continuously and automatically a quilted article consisting of an outer cover material, parallel and spaced apart strips of an elastic intermediate padding, and a foundation material. In this machine the padding material, continuously supplied by a feeding roll is cut by means of circular blades into longitudinal strips which are caused subsequently to meet with the

foundation material. Then said strips, which are spaced apart a predetermined distance, are covered by the cover material



which adapts to the form of the padding, and the assembly is quilted by the needles of the machine in the spaces between one padding strip and the next.

3,669,046

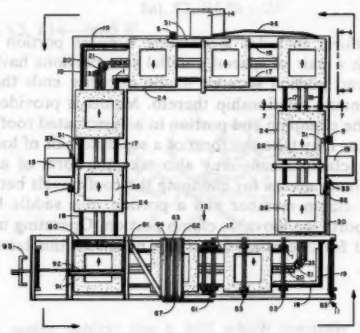
OVEREDGING APPARATUS

Donald W. Fowler, Decatur, Ga., assignor to Textiles, Inc., Newark, N.J.

Filed July 17, 1970, Ser. No. 66,158

Int. Cl. D05b *21/00*

U.S. Cl. 112—121.15 **2 Claims**



An overedging apparatus in which a fabric article having a plurality of sides is transported on a carrier over a course having a plurality of sides; the carrier successively presents each side of the article to a different sewing machine on each course, which sewing machine applies a finished, unravelable edge to each ravelable edge of the article; the carrier changes courses without reorientation.

3,669,047

APPARATUS FOR MANUFACTURING PANTS AND TIGHTS

Arne Marius Hedegaard, Hvidoyre, Denmark, assignor to Rothenborg Specialmaskiner for Sy-Industrien A/S

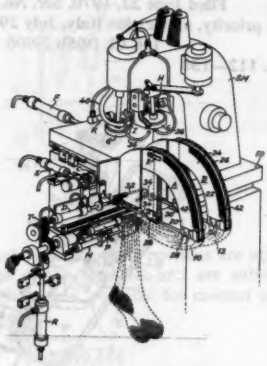
Filed Nov. 12, 1969, Ser. No. 875,628

Claims priority, application Great Britain, Nov. 12, 1968, 53,717/68

Int. Cl. D05b *21/00*

U.S. Cl. 112—121.15 **23 Claims**

The present invention relates to a method and apparatus for making pantie hoses or tights, which comprises taking two stocking - like articles, drawing the open ends of these articles onto two substantially parallel template devices each support device comprising two leaves, slitting each article lengthwise along an edge of its support device, moving the



outer leaf of each support device into substantial alignment with its other leaf and thereby bringing together the edges of the two leaves of each device, and joining the cut edges of the two articles by a joint extending along the aligned edges of the leaves.

3,669,048

DEVICE FOR, AND METHOD OF, FEEDING LIMP WORKPIECES TO AN APPARATUS

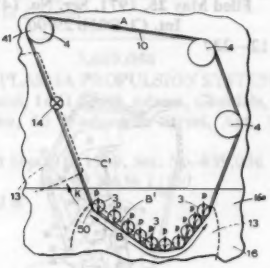
Geoffrey Bernard Dunn, Tatsfield, near Westerham, and Leonard Ernest York, Hurst Green, Oxted, both of England, assignors to Sira Institute, Chislehurst, Kent, England

Filed Aug. 17, 1970, Ser. No. 64,346

Claims priority, application Great Britain, Aug. 18, 1969, 41,148/69

Int. Cl. D05b *21/00*

U.S. Cl. 112—121.26 **20 Claims**



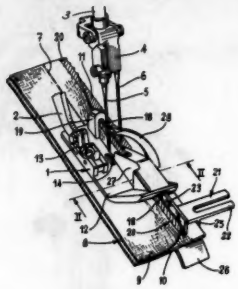
A device for feeding limp workpieces, especially textile piece parts to a processing apparatus and utilizing a flexible belt member entrained around rollers and disposed over a table. The belt member has a working surface facing the table which can adhere to a portion of a workpiece near an outer edge thereof to convey the latter to the operating zone of the apparatus when the belt member is driven around the rollers. Some of the rollers are bodily movable to cause the belt member to conform to the shape of the outer edge of the workpiece which can be straightened as the belt member circulates over the rollers. Puckers can be removed from the workpiece, or gathers produced in the workpiece, by controlling the tension in a part of the belt member.

3,669,049

PRESSER FOOT DEFLECTER OF A FABRIC EDGE IN A SEWING MACHINE

Nerino Marforio, Milan, Italy, assignor to S.p.A. Virginio Rimoldi & C., Milan, Italy

Filed June 22, 1970, Ser. No. 48,308
Claims priority, application Italy, July 29, 1969, 20219 A/69
Int. Cl. D05b *29/06*
U.S. Cl. 112—150 **5 Claims**



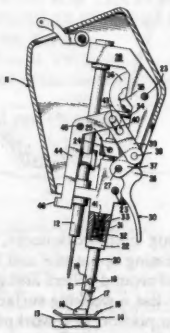
A presser foot deflector is provided for use with a two needle sewing machine to permit simultaneous assembly and serge stitching at the edges of a pair of fabrics to be seamed. The deflector includes a longitudinal guide channel located between a needle hole through which a first needle is moved to perform the assembly stitching and an opening through which a second needle is moved to perform the serge stitching. The guide channel receives the edge of the upper fabric and deflects the fabric edge upward to guide the edge between the needles to permit the second needle to apply serge stitching to the edge of the lower fabric and the first needle to simultaneously apply assembly stitching to the upper and lower fabrics to form a seam.

3,669,050

PUSH BUTTON PRESSER BAR RELEASE

Kenneth D. Adams, Madison, N.J., assignor to The Singer Company, New York, N.Y.

Filed May 25, 1971, Ser. No. 147,100
Int. Cl. D05b *29/00*
U.S. Cl. 112—237 **6 Claims**



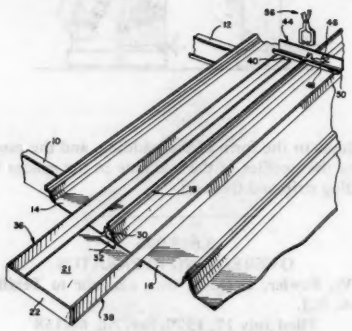
A linkage arrangement operating on the presser bar assembly to facilitate the release and controlled descent of the presser foot, or the limited ascent of the presser foot upon the operator's depressing a lever readily accessible from the front of the sewing machine and immediately adjacent to the sewing area.

3,669,051

STARTING PLATFORM FOR A ROOF SEAMING MACHINE

Maurice A. Conway, Grandview, Mo.; Carl C. Perkins, Jr., Prairie Village, Kans., and Norman A. Bellem, Kansas City, Mo., assignors to Butler Manufacturing Company, Kansas City, Mo.

Filed May 12, 1970, Ser. No. 36,588
Int. Cl. B21d *39/00*
U.S. Cl. 113—54 **17 Claims**



The platform includes a machine support portion connected with a pair of spaced parallel side portions having a clamping end portion secured to the opposite ends thereof and in spanning relationship thereto. Means is provided for clamping the clamping end portion to an associated roof. The clamp means may take the form of a separate pair of locking pliers. The clamp means may also take the form of a cam operated clamp means for clamping the roof panels between a movable clamp member and a portion of a saddle block which supports the movable clamp portion. Operating means is provided for operating the clamp means in this latter arrangement.

ERRATUM

For Class 113—119 see:
Patent No. 3,669,054

3,669,052

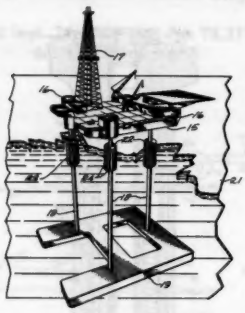
METHOD AND APPARATUS FOR PREVENTING ICE DAMAGE TO MARINE STRUCTURES

Joseph F. Schirtzinger, Pasadena, Calif., assignor to Air Logistics Corp., Pasadena, Calif.

Filed June 15, 1970, Ser. No. 46,273
Int. Cl. B63b *35/08*
U.S. Cl. 114—0.5 R **13 Claims**

A marine well drilling platform or the like having legs extending to the sea floor is protected from ice floes by comminuting devices at the water line for breaking the ice and thereby preventing crushing or overturning of the platform. The comminuting devices employ high velocity impacts against the ice to cause its fracture into chips as distinguished from cutting action. Rapidly rotating or reciprocating mechanisms with large "teeth" for making impact engage-

ment with the ice are employed in separate embodiments. Comminuting devices mounted for sweeping adjacent a



mooring buoy in one embodiment open a path through an ice floe for protecting the buoy and a ship moored at the buoy.

3,669,053

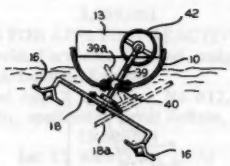
STEERING SYSTEMS ESPECIALLY FOR WATER CRAFTS

Hugh E. Sorenson, 3818-A North 37th Street, Milwaukee, Wis.

Continuation-in-part of application Ser. No. 58,300, July 27, 1970. This application Dec. 28, 1970, Ser. No. 101,616

Int. Cl. B63b *1/28*

U.S. Cl. 114—66.5 H **5 Claims**



A water vehicle has a hull which normally rests in the water. When the vehicle comes up to high speed, it is supported at each of its four corners by any suitable means, such as hydrofoils, pontoons, or the like. A tongue is individually associated with each of the rigid interconnections and the tongues are pivotally interconnected to simultaneously turn both the front and back supports. The hydrofoils or pontoons are tipped to act as underwater ailerons to assist in banking and turning.

3,669,054

METHOD OF MANUFACTURING ELECTRICAL TERMINALS

Thomas Dean Desso, Middletown, and Homer Ernst Henschen, Carlisle, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of application Ser. No. 716,491, Mar. 27, 1968, now Patent No. 3,503,036. This application Mar. 23, 1970, Ser. No. 21,566

Int. Cl. H02g *15/00*

U.S. Cl. 113—119 **2 Claims**

Electrical terminals are manufactured by stamping, from sheet metal stock, a blank for the terminal, forming a hole in the blank which is spaced from an edge of the blank, and driving a punch through the hole in a manner such that the surface portions of the blank which separate the hole from the edge are reoriented so that they extend transversely of

the plane of the blank. These surface portions are utilized as the contact surfaces of the terminal and are substantially greater than the surface area available for contact purposes on the edge of the blank.

3,669,055

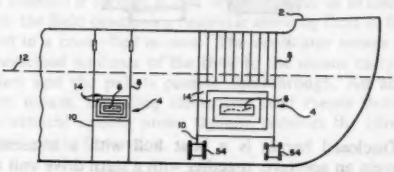
APPARATUS AND METHOD FOR SEALING A VESSEL OPENING

Walter F. Buce, 1206 May Lane, Bartlesville, Okla.

Filed Nov. 15, 1971, Ser. No. 198,703

Int. Cl. B63b *43/16*

U.S. Cl. 114—229 **12 Claims**



A sealing element having a plurality of concentrically positioned inflatable conduits spaced from one another by intervening passageways formed by an outer cover has means for passing fluids into the conduits and passageways and for positioning and maintaining the element in sealing engagement over an opening in a vessel.

3,669,056

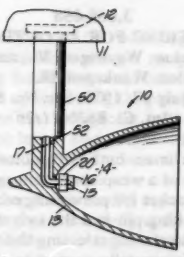
ARC PLASMA PROPULSION SYSTEM

Mihai Wurmbrand, 1431 South Adams, Glendale, Calif., and John L. Doane, 60 Wadsworth Street, Apt. 17D, Cambridge, Mass.

Filed Sept. 18, 1969, Ser. No. 859,036

Int. Cl. B63h *11/00*

U.S. Cl. 115—12 R **7 Claims**



An arc plasma propulsion system for propelling a buoyant structure through liquid utilizing a directed liquid stream

created by a continuing or a pulsing electric arc in a semi-confined body of liquid. The resulting accelerated liquid stream is directed rearwardly through a divergent passage and is effective to propel the structure forwardly as well as in a changing course by pivoting the propulsion device in an appropriate direction.

3,669,057

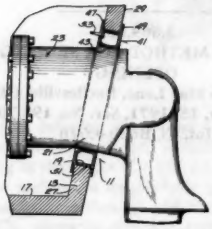
INFLATABLE TRANSOM SEALING ARRANGEMENT

William J. Shimanckas, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed July 17, 1970, Ser. No. 55,665

Int. Cl. B63h *5/06*

U.S. Cl. 115—34 R **2 Claims**



Disclosed herein is a boat hull with a transom having therein an aperture, together with a stern drive unit mounted on the boat hull and having a part extending through the transom aperture, and a seal extending between the transom and the part and comprising a member which is inflated so as to sealingly circumferentially engage both the part and the transom to prevent passage of water through the aperture and around the part into the hull.

Also disclosed herein is a method of sealing the transom of a boat having a stern drive unit extending through an opening in the transom and including the steps of placing an inflatable member around the circumference of the opening, inserting the stern drive unit part through an opening in the inflatable member, and inflating the member to sealingly engage the member with both the stern drive unit part and the boat transom. Alternatively, the inflatable member can be placed on the stern drive unit part and then the assembly of the stern drive unit and the inflatable member can be properly located in the transom opening prior to inflation.

3,669,058

NO BACK STEERING FOR AN OUTBOARD MOTOR

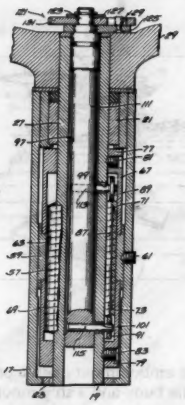
William J. Shimanckas, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed July 17, 1970, Ser. No. 55,780

Int. Cl. B63h *21/26*

U.S. Cl. 115—18 R **3 Claims**

Disclosed herein is an outboard motor having releasable means in the form of a wrap spring engaged between a king pin and a swivel bracket for preventing relative pivotal movement between the king pin and the swivel bracket. Also disclosed herein are means for releasing the wrap spring including a shaft which is pivotally carried by the king pin co-axially therewith and has means for disengaging locking engagement of the wrap spring between the king pin and the swivel bracket. Also disclosed herein are means connecting and releasing means to the king pin to effect steering movement of the outboard motor after release of the releasable means



in response to the application of a steering force to said releasing means.

3,669,059

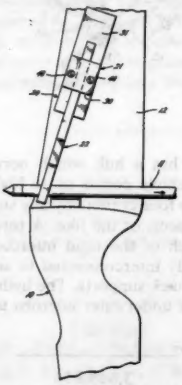
CLACKER FOR ATTACHMENT TO ARCHERY BOW

Frank T. Stuart, 2021 Lynnhaven Road, Fort Worth, Tex.

Filed Jan. 2, 1971, Ser. No. 108,111

Int. Cl. F41b *5/00*

U.S. Cl. 116—67 R **2 Claims**



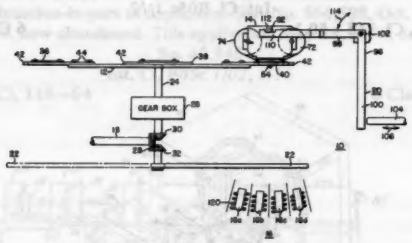
A clacker adapted for attachment to an archery bow. The clacker includes two metal strips of anodized aluminum, a spring element that is sandwiched between the metal strips, and an adhesive member that is used to attach the above members to an archery bow. The spring element is biased outwardly from a bow by an arrow during the drawing of a bow string. When the spring element moves out of engagement with an arrow, the spring element will slap the bow and the noise produced indicates to the user that the arrow has been drawn the proper distance.

3,669,060

MASK CHANGING MECHANISM FOR USE IN THE EVAPORATION OF THIN FILM DEVICES

Derrick J. Page, Export, and Paul O. Raygor, Irwin, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 24, 1970, Ser. No. 75,217
Int. Cl. C23c *13/12*
U.S. Cl. 118—7 15 Claims



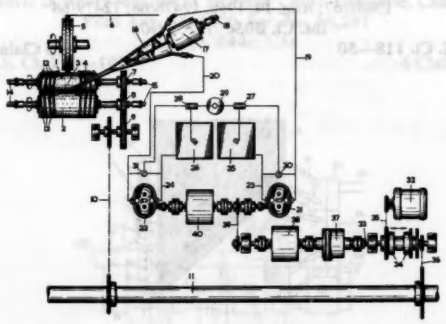
Apparatus for changing a mask used in the evaporation of thin film electronic components formed on flexible substrates by vapor deposition techniques, whereby a number of masks are successively brought into registration with a substrate for sequentially depositing a series of thin films of selected materials including semiconducting, insulating, or conducting materials through the mask onto the substrate. The apparatus is particularly concerned with alignment pins for enabling registration of successive patterns to be vacuum evaporated successively onto one area of a flexible substrate tape with an accuracy of $\pm 1\mu$. The area of the substrate tape may be changed and the process repeated time after time without opening the vacuum system.

3,669,061

APPARATUS FOR APPLYING REACTIVE ADHESIVE

Reindert Zuideveld, Farnham, England, assignor to Van Leer (U.K.) Limited, London, England

Filed Apr. 2, 1969, Ser. No. 812,594
Claims priority, application Great Britain, Apr. 2, 1968, 15,824/68
Int. Cl. B05c *1/08, 11/10*
U.S. Cl. 118—7 6 Claims



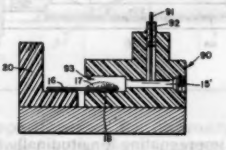
An apparatus is provided for applying a reactive-curing multiple-component adhesive to a rapidly moving web of non-porous material. The components are fed in a predetermined proportion to an application roller and an additional roller rotating at different circumferential velocities. The components are thereby intimately admixed under shear and kneading action, fresh adhesive is constantly mixed with older increments of adhesive, and cobwebbing of older increments of adhesive is thus reduced or eliminated. A stereotype, or rotogravure, roller transfers the adhesive from the application roller to the surface to be coated.

3,669,062

SLOT APPLICATOR MEANS

Milton Kallianides, 52 Gifford Street, Brockton, Mass., and Gerhart P. Klein, 49 Raymond Street, Manchester, Mass.

Continuation of application Ser. No. 701,488, Jan. 29, 1968, now abandoned. This application Nov. 30, 1970, Ser. No. 93,869
Int. Cl. B05c *3/10*; G01r *27/02*
U.S. Cl. 118—9 7 Claims



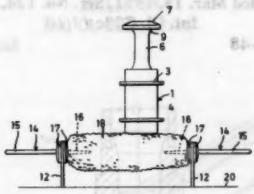
The combination of a reservoir containing a fluid and applicator means for applying the fluid to means carrying a plurality of pellets to be used as capacitors. The applicator means includes upper and lower walls connected by a rear wall so as to form a slot having a determined length and width. A channel is formed in one of the walls so as to couple the slot to the fluid containing reservoir allowing fluid to flow to the slot in a controlled manner. The applicator means applies determined amounts of the fluid to the means carrying said pellets and the pellets passing therethrough. An additional slot means, including electrolyte feed means thereto and an electrical sensing probe therein, receives the carrier and treated article for testing.

3,669,063

BUTTER SPREADER AND SUPPORT FOR EARS OF COOKED CORN

Manuel Daniluke, 434 Vienna Street, San Francisco, Calif.

Filed Apr. 5, 1971, Ser. No. 131,348
Int. Cl. B05c *11/00*
U.S. Cl. 118—13 6 Claims

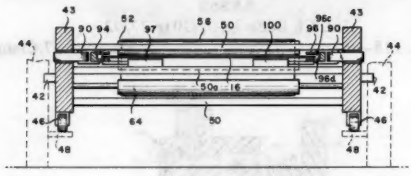


A tube open at one end for receiving compacted butter and a manually actuatable plunger reciprocable within the tube for dispensing butter from said one end directly onto an ear of cooked corn upon moving the plunger toward said one end when said open end is adjacent to the ear and is moved longitudinally of the latter, said tube including finger-engageable means for holding the tube and for actuating the plunger, and for supporting the tube on its side when not in use, the plunger being a unit readily separable from a unitary tube leaving a through, substantially uniform, diameter open-ended bore to facilitate cleaning. A holder is provided for supporting the ear to be buttered on, but spaced above, a horizontal surface and for rotating the ear when so supported, and for manually holding the ear after buttering, for eating the corn.

3,669,064
APPARATUS FOR IMPREGNATING CORRUGATED CARDBOARD

Walther J. Hoelzinger; Johann Wenninger; Walter Mayer; Karl Zoegernitz; Hermann Schroetter, and Werner Braun, all of Vienna, Austria, assignors to Boise Cascade Corporation, Boise, Idaho

Filed Feb. 9, 1970, Ser. No. 9,581
Int. Cl. B05b *15/04;* B31f *1/20*
U.S. Cl. 118—39 21 Claims

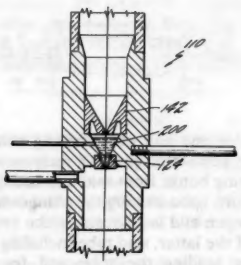


Apparatus for impregnating longitudinally travelling corrugated board having transversely extending flutes, including suction means arranged adjacent one longitudinal edge of the board for establishing a vacuum in the flutes to draw a material, such as an impregnant, therethrough. The invention is characterized by the provision of retaining means for preventing undesirable lateral displacement of the board in the direction of the suction means. In the preferred embodiment, the retaining means comprise longitudinally extending endless belt means responsive to the vacuum established in the flutes for clamping the moving board against lateral displacement without crushing the flutes or causing damage to the board. Preferably the endless belt means are provided with longitudinal ribs that extend within corresponding grooves in the rollers upon which the belts are mounted, thereby preventing lateral movement of the belt means—and the board—relative to the rollers. In accordance with an important feature of the invention, flow control means are provided for accurately controlling the speed and/or extent of longitudinal penetration of the material through the flutes.

3,669,065
REACTOR SEAL

Raymond C. Smart, Hazardville, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 15, 1971, Ser. No. 124,390
Int. Cl. C23c *13/10*
U.S. Cl. 118—48 3 Claims

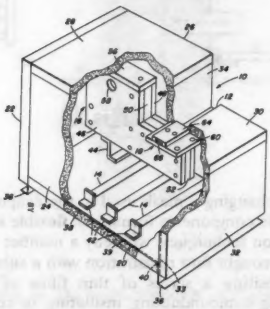


In apparatus wherein a moving wire is drawn through a reaction tube and a material is deposited thereon, a reactor seal is provided to isolate the reactant gases within the tube from the surrounding atmosphere. The reactor seal comprises a fitting having a generally vertically disposed passageway therethrough within which is disposed a pair of aligned orificed inserts through which the wire is drawn. A pool of liquid metal is supported on the lower insert at the orifice thereof by surface tension forces. Both inserts have downwardly converging inner walls leading to their orifice to facilitate threading.

3,669,066
ADHESIVE APPLICATOR

Carl E. Smith, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 2, 1971, Ser. No. 120,179
Int. Cl. B05c *3/12*
U.S. Cl. 118—50.1 6 Claims

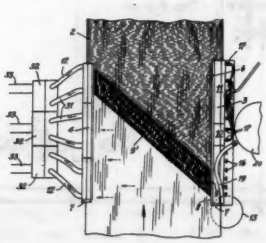


A gas-tight oven containing an adhesive well in external contact with tape to be coated and in internal communication with the oven atmosphere. Heating the oven reduces adhesive viscosity and increases pressure, forcing adhesive into contact with moving tape. Parts requiring frequent cleaning such as doctor blades, adhesive rollers or the like are eliminated. An alternative embodiment utilizes an external source of pressure.

3,669,067
APPARATUS FOR IMPREGNATING CORRUGATED CARDBOARD

Werner Achermann, and Franz Achermann, both of Zurich, Switzerland, assignors to Boise Cascade Corporation, Boise, Idaho

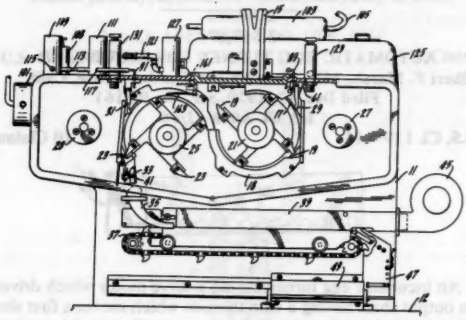
Filed Sept. 27, 1968, Ser. No. 763,268
Claims priority, application Switzerland, Sept. 29, 1967, 13688/67; Aug. 14, 1968, 12478/68; 12479/68
Int. Cl. B05c *7/02, 11/06*
U.S. Cl. 118—50 13 Claims



Apparatus for impregnating corrugated cardboard during the manufacturing process forming the said corrugated cardboard. A vacuum is formed within the corrugations of the cardboard and impregnating material is introduced into the corrugations under the influence of the said vacuum. The impregnating material is introduced under conditions which may be varied with respect to composition, temperature,

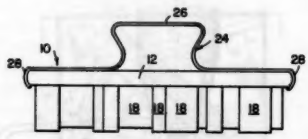
viscosity and other variable process parameters. The apparatus of this invention includes a means for producing a suction on one edge of a corrugated cardboard while introducing impregnating material at the other edge of the corrugated cardboard as it passes through the impregnating apparatus.

3,669,068
MATRIX COATING APPARATUS
Norman C. Geitz, 2178 Pratt Avenue, Des Plaines, Ill.
Continuation-in-part of application Ser. No. 866,598, Oct. 15, 1969, now abandoned. This application May 25, 1970, Ser. No. 40,945
Int. Cl. B05c *1/02, 1/16*
U.S. Cl. 118—64 **8 Claims**



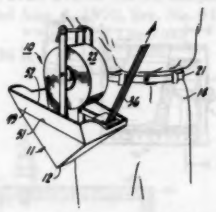
A matrix coating machine in which the matrices are moved by first and second conveyor wheels consecutively through a first and second portion of an arcuate track. In the preferred embodiment of the invention, applicators apply coating solution to defined areas on the sides of the matrices. The coating solution is supplied to the applicators on a demand basis as determined by movement of the matrices along the arcuate path. In another embodiment of the invention, the entire matrix is coated by movement through a tank located along one portion of the arcuate path.

3,669,069
SURFACE TEXTURIZER
Cedric D. Bourboulis, 1425 Tichenor Court, Lafayette, Calif.
Filed Aug. 31, 1970, Ser. No. 68,291
Int. Cl. B44d *3/34*
U.S. Cl. 118—102 **4 Claims**



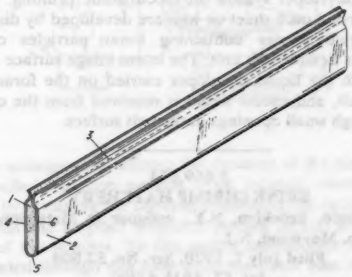
A device for texturizing painted surfaces in which a plurality of tapered S-shaped resilient petals or flaps depend from a formable backing member. The petals or flaps are of nonuniform length. The device has a removable handle for ease in applying it to wall and ceiling surfaces.

3,669,070
DISPENSING DEVICE FOR DRY WALL TAPE AND JOINT CEMENT
Forrest E. Wallace, P.O. Box 24, Vacaville, Calif.
Filed Sept. 28, 1970, Ser. No. 75,818
Int. Cl. B05c *11/04*
U.S. Cl. 118—102 **8 Claims**



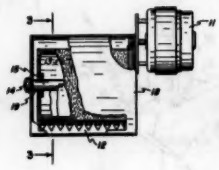
A portable tape dispenser for dispensing dry wall tape comprises a hopper for containing a supply of dry wall joint cement in fluid form and means serving to support the hopper from the waist of a workman in a manner freeing both of his hands. A roll of dry wall joint tape is carried and supported for rotation from the hopper whereby guide means lead the tape from its roll into and out of the supply of joint cement. A dispensing slot is formed between a stationary knife edge member and a movable knife edge member spaced therefrom to receive the tape therebetween. The two knife edge members serve to remove cement from opposite sides of the tape. However, the spacing between the edges serves to permit one of the two edges to leave a coating of cement of predetermined thickness when the tape is withdrawn across the other knife edge member. A comb element is disposed in conjunction with one of the knife edge members so that the coating of cement applied to the tape will extend in spaced longitudinal lines. A trowel cleaning chute extends along the outer edge of the hopper.

3,669,071
LIQUID APPLYING MEMBER
Albert George Ronald Gates, London, England, assignor to Gestetner Limited, London, England
Filed May 22, 1970, Ser. No. 39,879
Claims priority, application Great Britain, May 22, 1969, 26,136/69
Int. Cl. B05c *11/00*
U.S. Cl. 118—264 **6 Claims**



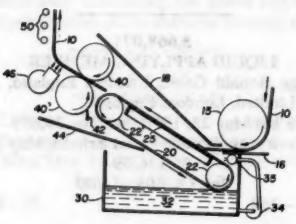
The specification discloses a priming wick for use in printing apparatus and comprising an outer fine short pile material, prferably velvet, surrounding an inner absorbent reservoir structure, preferably synthetic sponge material. Such a priming wick may conveniently be used for applying priming solution to the blanket of an offset lithographic machine.

3,669,072
DEVELOPER APPARATUS
Robert W. Reynolds, Los Angeles; James K. Bibeau, Monterey Park, and Francis J. Jansen, Northridge, all of Calif., assignors to Xerox Corporation, Rochester, N.Y.
Filed Feb. 11, 1970, Ser. No. 10,539
Int. Cl. B05b 5/02
U.S. Cl. 118—637 8 Claims



An apparatus for developing electrostatic images wherein a drum or belt encircling a magnetic member has developer particles magnetically attracted to its surface in a serrated surface pattern by means of a brush shaper. A motor rotates the drum or belt carrying the shaped developer particles and deposits them on the charged surface for development. The motor in a reverse rotation phase mixes the developer particles in its container, preventing particle agglomeration.

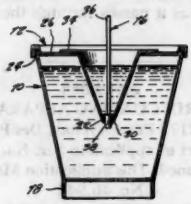
3,669,073
ELECTROSTATIC DEVELOPING SYSTEM
Joseph Savit, Glencoe; Rudolph P. Guzik, Chicago; Harry A. Wayne, Evanston; Arvind R. Saklikar, Park Forest, and Jack M. Van Eck, Chicago, all of Ill., assignors to American Photocopy Equipment Company, Evanston, Ill.
Filed Apr. 4, 1969, Ser. No. 813,531
Int. Cl. G03g 13/10
U.S. Cl. 118—637 9 Claims



Liquid developer system for electrostatic printing. Latent images carried on a sheet or web are developed by distributing a liquid carrier containing toner particles over a foraminous flexible belt unit. The latent image surface is contacted with the liquid developer carried on the foraminous flexible belt, and excess liquid is removed from the contact area through small openings in the belt surface.

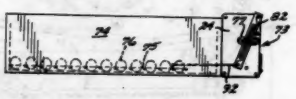
3,669,074
BRINE SHRIMP HATCHERY
Robert Stasio, Brooklyn, N.Y., assignor to Metaframe Corporation, Maywood, N.J.
Filed July 7, 1970, Ser. No. 52,804
Int. Cl. A01k 61/00
U.S. Cl. 119—2 5 Claims

A device for hatching brine shrimp eggs having a main receptacle provided with a removable cover for containing a salt-water solution in which the brine shrimp eggs are to be hatched. The cover is formed with a central opening in which is seated a funnel shaped receptacle having an opening at its bottom end. A plug at the end of a rod serves to close the opening of the funnel shaped receptacle which contains fresh water. Brine shrimp eggs are placed in the salt-water solution and when hatched, the plug in the funnel shaped receptacle



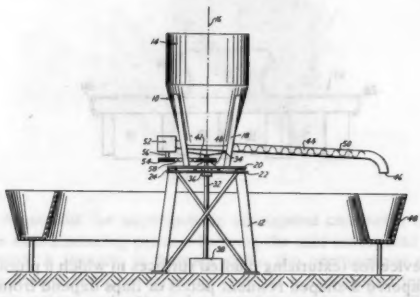
is withdrawn allowing the hatched brine shrimp to enter the receptacle through its bottom opening, and are captured therein when the plug is reinserted in the opening.

3,669,075
AUTOMATIC EGG TURNER FOR INCUBATOR
Albert F. Marsh, 14232 Brookhurst, Garden Grove, Calif.
Filed Dec. 17, 1970, Ser. No. 99,161
Int. Cl. A01k 41/06
U.S. Cl. 119—44 10 Claims



An incubator egg turner having a drive motor which drives an output shaft having a cam thereon which moves a first single pole double throw switch between a first position when the cam is in one 180° portion of its rotation and a second position when the cam is in the other 180° of rotation, a timer motor which drives a cam which moves a second switch to alternately connect said drive motor to electrical power through said first switch to rotate said output shaft 180° at a time, and there being provided on said output shaft a crank arm which is connected to the egg grid of an incubator to move said grid from one position to another each time the output shaft is rotated 180°, and including a test circuit which can selectively connect electrical power to the drive motor no matter what is the position of said first mentioned cam, and anchor rods rigidly connected to the turner by which the turner can be removably anchored to the incubator.

3,669,076
ROTATABLE HOPPER LIVESTOCK FEED DISPENSER
Jacob B. Ellis, Route 2, P.O. Box 2116, Okmulgee, Okla.
Filed June 24, 1970, Ser. No. 49,216
Int. Cl. A01k 5/02
U.S. Cl. 119—52 B 4 Claims



A feed dispenser apparatus comprising a storage hopper mounted on a support tower, said hopper being rotatable

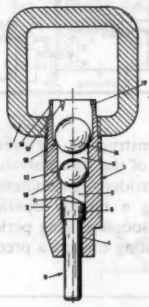
about its own longitudinal axis. A feed dispensing conduit is carried by the hopper and is in open communication therewith for receiving the feed therefrom and dispensing the feed to a circular or annular feed trough. The dispensing conduit moves simultaneously with the rotatable hopper for distributing the feed substantially uniformly into the feed trough. A feed screw or auger mechanism is rotatably mounted within the feed dispensing conduit for facilitating movement of the feed therethrough and discharging of the feed therefrom.

3,669,077

DRINKING NIPPLE FOR POULTRY

Gozen Spierenburg, Hilversum, Netherlands, assignor to N.V. Gereedschappenfabriek Spierenburg, Loosdrecht, Netherlands

Filed June 30, 1970, Ser. No. 51,044
Claims priority, application Netherlands, July 1, 1969, 6910036
Int. Cl. A01k *7/02*; **F16k** *1/06, 1/44*
U.S. Cl. 119—72.5 **5 Claims**



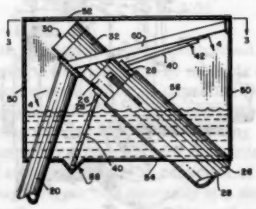
A drinking nipple for poultry comprising a housing having two ball valves of different diameter arranged one above the other on their seats, a tappet being located in the lower end of said housing, said tappet having a head co-operating with the lowermost ball valve and a stem projecting from said housing, the distance between the two balls being such that the tappet when being raised first lifts the first ball from its seat and upon further movement of said tappet the first ball lifts the second ball from its seat.

3,669,078

LIVESTOCK TREATER

Wayne H. Smith, Leoti, Kans.

Filed Aug. 31, 1970, Ser. No. 68,149
Int. Cl. A01k *13/00, 29/00*
U.S. Cl. 119—157 **5 Claims**



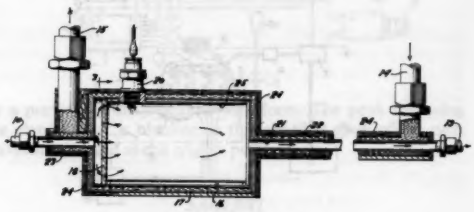
The invention is a livestock treater. It has a frame with a reservoir mounted thereon. A dipper within the reservoir is turnably connected to a rubbing device, preferably a portion of the frame connected to the dipper. More particularly, the invention is a cattle treater having a rotatable rubbing device integral with the supporting frame for a reservoir and integral with a dipper operable to remove liquid from the reservoir and transfer the same to the rubbing device.

3,669,079

WATER HEATER

Robert B. Black, 2925 Denver Street, Corpus Christi, Tex.

Filed Aug. 6, 1970, Ser. No. 61,775
Int. Cl. F22b *7/00*
U.S. Cl. 122—136 R **12 Claims**



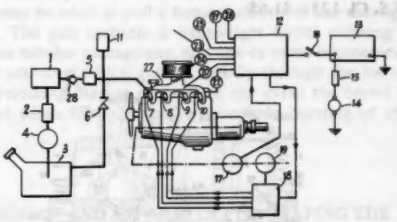
Water heaters having a combustion chamber with a water jacket and having flue tubes extended from the combustion chamber with surrounding water tubes, the water tubes being connected with the water jacket and the circulation being arranged to provide for passage of the water through the water tubes surrounding the flue tubes and through the water jacket in counterflow relation to the flow of products of combustion through the combustion chamber and through the flue tubes.

3,669,080

ELECTRONIC CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE INJECTORS

Louis A. Monpetit, L'Etang-la-Ville, France, assignor to Societe des Procedes Modernes d'Injection Sopromi, Les Mureaux, France

Filed Feb. 6, 1970, Ser. No. 9,329
Claims priority, application France, Feb. 12, 1969, 6903274
Int. Cl. F02m *51/00*
U.S. Cl. 123—32 EA **4 Claims**



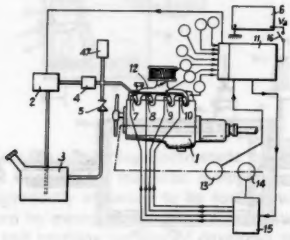
An arrangement defining the duration of the electronically controlled injection periods in an internal combustion engine, by returning the flip-flop controlling the actuation of an injector into its prior condition putting an end to the operation of the injector. To this end, a uni-junction transistor is grounded through one base while the other base is subjected to a voltage varying in accordance with the operation of the engine and defining the actually desired duration of injection. This duration is thereby brought to an end by the discharge of a condenser fed by the flip-flop and connected with the emitter of the uni-junction transistor while an auxiliary transistor transmits the voltage of the discharged condenser to the flip-flop to return the latter to its prior condition.

3,669,081

ELECTRONICALLY CONTROLLED INJECTING ARRANGEMENTS FEEDING FUEL UNDER CONSTANT PRESSURE INTO INTERNAL COMBUSTION ENGINES

Louis A. Monpetit, Chemin de la Butte, France, assignor to Societe des procedes Modernes d'Injection Modernes SOPROMI, Les Mureaux, France

Filed May 18, 1970, Ser. No. 38,192
Claims priority, application France, May 23, 1969, 6916896
Int. Cl. F02m *51/00*
U.S. Cl. 123—32 EA 5 Claims



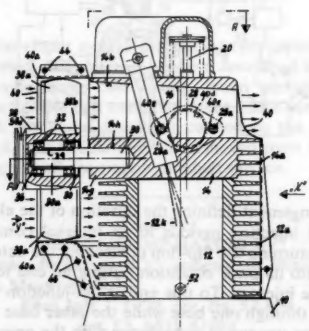
A control of the output of the pump feeding fuel under constant pressure into the manifold of an internal combustion engine, said pump operating under control of an electronic system defining the frequency and duration of the injections. Said control ensures an adjustment of the output of the pump in accordance with the actual requirements of the engine. For instance an electric motor driving the pump is fed by pulses transmitted electronically in synchronism with the injection-producing signals so that the average current feeding the motor which is measured by the integral of said pulses may match such requirements with a delay at the beginning or end of the pulse if required.

3,669,082

INTERNAL COMBUSTION ENGINE HAVING A COOLING-AIR BLOWER

Ernst Hatz, Ruhstorf, Germany, assignor to Motorenfabrik Hatz KG, Ruhstorf, Germany

Filed May 7, 1970, Ser. No. 35,476
Claims priority, application Germany, May 7, 1969, P 19 23 300.2
Int. Cl. F01p *1/02, 5/02, 1/10*
U.S. Cl. 123—41.65 5 Claims



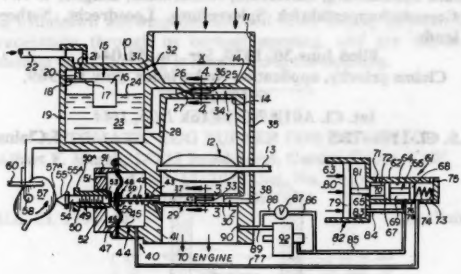
An internal combustion engine having a cooling-air blower such as an axial flow fan having a mounting bolt mounted directly on the cylinder head of the engine and a housing, preferably formed in two shell-halves connected together and mounted on the engine by screws or the like which already exist on the engine. The shell-halves form cooling-air passageways by the engine for air from the blower.

3,669,083

CARBURETOR WITH FUEL SHUT-OFF MEANS HAVING A FUEL-AIR RATIO ADJUSTMENT MECHANISM

Edward F. Fort, Naperville, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed July 17, 1970, Ser. No. 55,804
Int. Cl. F02d *9/00*; F02n *7/12*
U.S. Cl. 123—97 B 12 Claims



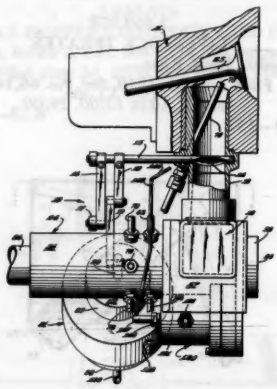
In a carburetor construction for metering liquid fuel for delivery downstream of the throttle valve to a spark-ignition engine, means are provided for remotely controlling the fuel-to-air ratio including a rapidly operative mechanism for shutting off the fuel source during periods when the engine or vehicle is decelerating toward a predetermined minimum speed value.

3,669,084

CARBURETION SYSTEM

Harvey A. Cook, Cleveland, Ohio, assignor to TRW Inc., Cleveland, Ohio

Continuation-in-part of application Ser. No. 800,689, Feb. 19, 1969, now abandoned , Continuation-in-part of application Ser. No. 608,887, Jan. 12, 1967, now Patent No. 3,475,011. This application Oct. 15, 1970, Ser. No. 81,165
Int. Cl. F02n *69/00*
U.S. Cl. 123—139 AW 14 Claims



Individual supply pipes connect each of the intake ports of the engine to an air-fuel distributor system which includes an intake air manifold. A source of liquid fuel maintained at

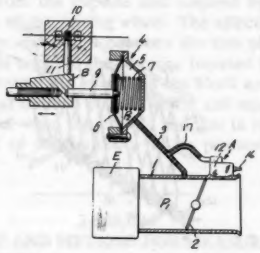
substantially constant pressure is connected to the air-fuel distributor system. A plurality of individual adjustable throttle valves are disposed respectively within the supply pipes and are interconnected with one another for joint movement. The speed (and power) of the engine is varied by manually varying the limit of adjustability of the air-fuel distributor system. The throttle valves are automatically (as contrasted with manually) adjusted by means of a vacuum controller and throttle valve actuator which utilizes after-throttle vacuum as an operating or power source to adjust the throttle valves to maintain a substantially constant manifold vacuum.

3,669,085

FUEL INJECTION APPARATUS TO COMPENSATE FOR TEMPERATURE AND PRESSURE VARIATIONS IN THE AMBIENT ATMOSPHERE

Kiyoshi Miyaki, Asaka, and Hiroshi Kogure, Tokorozawa, both of Japan, assignors to Handa Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 10, 1970, Ser. No. 62,328
Claims priority, application Japan, Aug. 8, 1969, 44/62302
Int. Cl. F02d *1/04*
U.S. Cl. 123—140 MC **5 Claims**



A fuel injection apparatus has a negative pressure chamber connected to a suction pipe behind a throttle valve for regulating the amount of fuel injected into the engine. In order to compensate for temperature and pressure variations of the ambient atmosphere and maintain the fuel-air ratio at an optimum value, a selected amount of ambient air is mixed with the suction air to control the magnitude of the negative pressure in the chamber. The amount of air is regulated by a valve controlled by a temperature sensitive member or a pressure sensitive member or both.

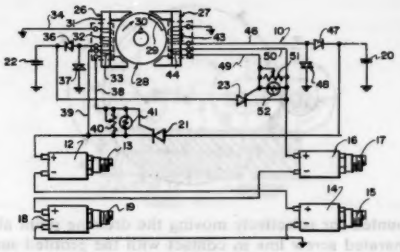
3,669,086

SOLID STATE IGNITION SYSTEM

Ljubomir Beuk; Peter Dogadko, both of Chicago, and Larry Sansbury, Elmhurst, all of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Sept. 30, 1970, Ser. No. 76,807
Int. Cl. F02p *3/06*
U.S. Cl. 123—148 E **9 Claims**

A solid state ignition system is constructed for use with the flywheel magneto of either single or multiple cylinder engines and the ignition system utilizes a capacitor discharge ignition circuit arrangement. High energy pulses are produced by a permanent magnet on a flywheel rotating past a charge-trigger coil assembly which induces magnetic flux therein to generate and store energy in the capacitor of the ignition circuit. The charge-trigger coil assembly is a single constructed unit having both a capacitor charging coil and a trigger coil formed on a single paramagnetic core. Ignition timing advance is accomplished simultaneously with and as a result of increased engine speed. This automatic timing advance is accomplished by utilizing the uniform change in rise time of the first peak of a trinary peaked pulse waveform that is generated by the trigger winding. This first peak trigger pulse is used to discharge the capacitor after it has been charged



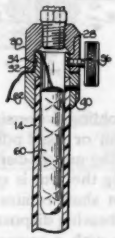
by a previous trinary peaked waveform. The peak following the charge peak is blanked so that the first peak of the next waveform is used as the trigger pulse.

3,669,087

LINE THROWING GUN

James C. Hamrick, and Howard G. Ruddick, both of Charlotte, N.C., assignors to Jet Line Products, Inc., Matthews, N.C.

Filed Aug. 17, 1970, Ser. No. 64,246
Int. Cl. F41f *7/00*
U.S. Cl. 124—11 **11 Claims**



A gas operated line throwing gun for casting a line package across a relatively non-accessible area such that the trailing line end may be used to pull a heavier electrical line through the area. The gun includes a lightweight barrel defining a continuous tubular passageway, and one or more escapement ports are provided which extend radially through the barrel wall for releasing the gas pressure in the event the barrel is obstructed when fired, to thereby preclude bursting of the same.

3,669,088

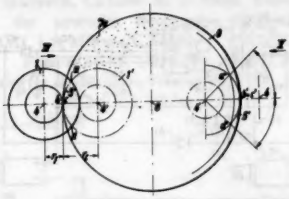
METHOD OF AND APPARATUS FOR SHAPING THE PROFILED SURFACE OF A ROTATING TOOL FOR PRODUCING CYCLOID THREAD FLANKS ON SCREWS

Gerhard Stade, Berlin, Germany, assignor to Firma Herbert Lindner GmbH, Berlin, Germany

Filed June 11, 1970, Ser. No. 45,442
Claims priority, application Germany, Aug. 1, 1969, P 19 39 919.0
Int. Cl. B24b *53/06*
U.S. Cl. 125—11 **12 Claims**

A profiled surface of a rotating tool, such as a grinding disk, for producing cycloid thread flanks in screws, is shaped by a dressing device positionable in engagement with the surface of the disk which forms the threads. The dressing device is movable along a generated screw line determined as a helical line of contact between the screw being produced and an

imaginary counter-screw in engagement with the screw. The dressing device includes a traverse bar on which diamond dressing points are positioned and the traverse bar is



mounted for selectively moving the dressing point along the generated screw line in contact with the profiled surface of the disk so that the proper profile for forming cycloid thread flanks is obtained.

3,669,089

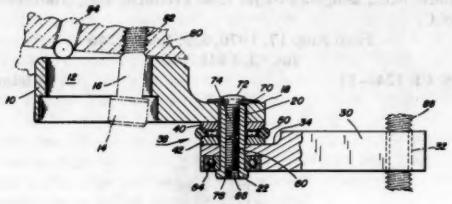
SWING ARM FOR HOLDING A DRESSING DEVICE

Henry F. Swenson, 22 Holmehill Lane, Roseland, N.J.

Filed Dec. 16, 1970, Ser. No. 98,654

Int. Cl. B24b *53/12*

U.S. Cl. 125—11 R **6 Claims**



A swing arm for holding a dressing device is adapted for mounting on a column or base portion of a machine tool. The swinging end of the arm is disposed to hold a threaded dressing member while the arm is swung in an arc around a pivot shaft. The pivot shaft retains a pivot joint which includes a roller thrust bearing disposed between the fixed and the movable member with a spring-type washer urging the fixed and the rotatable member together in a determined frictional relationship. An O-ring is seated in a groove formed at the roller raceway so as to seal the thrust bearing as well as provide a dust seal and vibration dampener.

3,669,090

METHOD OF CLEANING AN OVEN WITH INTERNAL AIR CIRCULATION

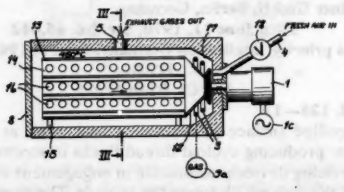
Anton Ladislaus Jung, Am Gerichtskoppel 6, 6348 Herborn, and Erhard Ledwon, Schlinkenwieg 10, 6349 Guntersdorf, both of Germany

Filed May 25, 1970, Ser. No. 40,128

Claims priority, application Germany, Aug. 18, 1969, P 19 41 935.3

Int. Cl. F24c *15/32*

U.S. Cl. 126—21 A **9 Claims**



A self-cleaning oven is provided with a rack which is substantially closed at its sides, fully open at one end, and formed as a hood at the other end. A centrifugal fan is provided in the oven at the hood used to circulate air around and through the rack. An air inlet is provided in the oven wall that opens adjacent the fan intake. The oven is further provided with an outlet fitted with a catalytic afterburner. During heating of the oven to 400°–500° C. for cleaning, fresh air is drawn in through the inlet, circulated throughout the oven interior, and exhaust gases pass out through the afterburner.

3,669,091

WITHDRAWN

3,669,092

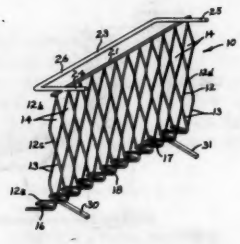
FIREPLACE GRATE FOR BURNING PAPERS

Keith G. Bolster, 2213 South McCable, Spokane, Wash.

Filed July 10, 1970, Ser. No. 53,782

Int. Cl. F23h *13/02*

U.S. Cl. 126—165 **5 Claims**



A fireplace grate with a framework of expanded metal which is provided with supports enabling the grate to be alternatively positioned in a horizontal orientation for burning logs in the conventional manner or to be positioned upright for burning newspapers, magazines and the like.

3,669,093

APPARATUS FOR GIVING MEDICAL TREATMENT BY IRRADIATION FROM RADIOACTIVE SUBSTANCES

Kurt Sauerwein, Dillenburger Weg 3, Dusseldorf, and Hans Goedecke, Weimarer Strasse 59, Mettmann Rhineland, both of Germany

Filed Dec. 30, 1969, Ser. No. 889,128

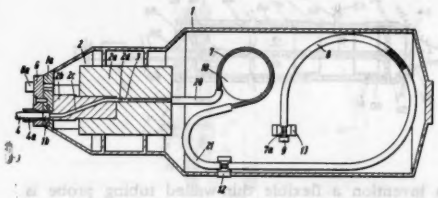
Claims priority, application Germany, Sept. 5, 1969, P 19 45 015.8

Int. Cl. A61j *1/00*; A61n *5/10*; G21f *5/00*

U.S. Cl. 128—1.1 **10 Claims**

Apparatus for treating human or animal patients by local irradiation from a radioactive substance comprises a hollow probe closed at one end for introduction into a natural or surgically produced opening in the body of the patient and a capsule which contains a quantity of the radioactive substance and is fixed to the end of a flexible but longitudinal thrust-transmitting cable which propels the capsule between the interior of a shielding block and the interior of the probe which is fixed to the block by a delivery tube through which the cable extends. The cable passes through a passage in the block and when the capsule is situated in the interior of the

block the cable extends from the block through an opening in the end of the block remote from the delivery tube, around the greater part of the periphery of a driving wheel which is situated in the housing containing the shielding block, through a storage tube to a terminal stop. The cable is pressed against the driving wheel by spring-loaded rollers so that it is moved when the driving wheel rotates and the storage tube extends between the housings of two photo-electric assemblies which detect the movement of the end of the



cable remote from the capsule and respond by controlling the movements of the driving wheel. The effective length of the storage tube, measured between the two photo-electric cell assemblies is equal to the distance traveled by the radiation capsule between the interior of the block and the end of the probe so that the two photo-electric cell assemblies stop the driving wheel when the capsule is either in its position at the closed end of the probe or in its position within the block.

3,669,094

DEVICE AND METHOD FOR MEASURING INTRACRANIAL PRESSURE

William T. Heyer, Santa Barbara, Calif., assignor to Heyer-Schulte Corporation, Santa Barbara, Calif.

Filed July 6, 1970, Ser. No. 52,654
Int. Cl. A61b *5/00*; A61m *27/00*
U.S. Cl. 128—2 **8 Claims**

sure without substantially affecting the existing pressure by introduction of the measuring and drainage means.

A physiological drainage catheter and a method of using the same to provide a means for measuring intracranial pres-

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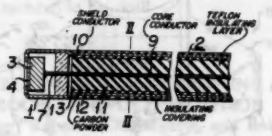
3,669,095

CATHETER-TYPE SEMI-CONDUCTOR RADIATION DETECTOR FOR INSERTION INTO A HUMAN BODY

Tetsuji Kobayashi, Yokohama-shi; Seiichi Takayanagi, Tokyo, and Tohru Sugita, Yokohama-shi, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Aug. 22, 1967, Ser. No. 662,463
Claims priority, application Japan, Aug. 25, 1966, 41/79743; Nov. 14, 1966, 41/74423; Mar. 16, 1967, 42/16082
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.1 R **10 Claims**

A catheter type semiconductor radiation detector is comprised by a semiconductor detector adapted to be inserted in a human body to detect radiations to convert them into electric signals, and a coaxial cable adapted to transmit said converted electric signals to an external measuring device for de-



tected outputs. The coaxial cable includes a layer of carbon powders interposed between an insulating layer adjacent a core conductor and a shield conductor.

3,669,096

SELF-DONNING SPHYGMOMANOMETER CUFF

Mathew Hurwitz, 63 Oakland Avenue, Auburndale, Mass.

Filed Apr. 7, 1970, Ser. No. 26,283
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 C **2 Claims**

A self-donning sphygmomanometer cuff with adjustable, self-donning features which simplify the attachment of the cuff to an arm or leg by the person utilizing said cuff. The cuff has an elasticized strip portion secured at one end to a non-stretchable portion of the cuff body which, in combination with cooperating connector means provides adjustable initial cuff tension around the appendage before it is secured to the appendage by conventional means.

3,669,097

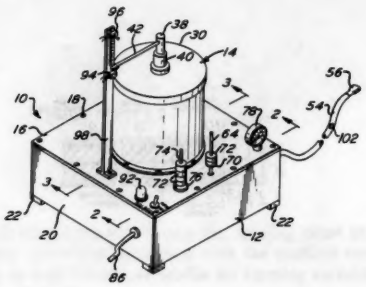
LUNG EXERCISING APPARATUS AND METHOD

Edward Fitz, 27 Llanfair Road, Ardmore, Pa.

Continuation-in-part of application Ser. No. 680,657, Nov. 6, 1967, now abandoned. This application June 19, 1969, Ser. No. 843,894
Int. Cl. A61b *5/08*
U.S. Cl. 128—2.08 **11 Claims**

A device and method for increasing the capacity and strength of lungs having an expansible bellows chamber, an inlet to the chamber connected to a conduit, a mouthpiece at the end of the conduit for breathing into it, and a selectively adjustable valve in the conduit for constricting the passage from the mouthpiece to the inlet, whereby a force in excess

of the normal pressure developed by the lungs is required to expand the bellows, and an outlet for said chamber with a



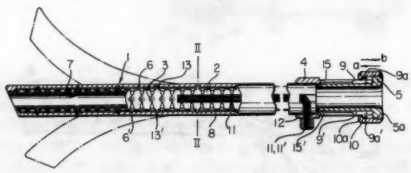
valve and variable control therefor adapted to open the outlet when the bellows has been expanded a preselected amount.

3,669,098

ENDOTRACHEAL TUBE

Nagashige Takahashi, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sept. 23, 1969, Ser. No. 860,272
Claims priority, application Japan, Oct. 5, 1968, 43/86558
Int. Cl. A61b *1/06*
U.S. Cl. 128—6 **4 Claims**



An endotracheal tube comprising a flexible tube adapted to be bent in a plane and connected at its rearward end to a control body in the form of a cylindrical guide member. A pair of string means extend lengthwise in the wall of the flexible tube at diametrically opposite positions in the cross-section thereof in a plane perpendicular to the neutral plane of the flexure of the flexible tube with their forward ends secured to the forward end of the flexible tube while their rearward ends are connected to control means in the control body so as to be actuated thereby so that the flexible tube is rendered to be stiffened without allowing the flexure thereof by tightening the string means by operating the control means thereby facilitating the insertion of the endotracheal tube into the trachea while the flexible tube is rendered to be flexible by slackening the string means by the operation of the control means so that the operation of the bronchoscope inserted into the endotracheal tube is facilitated.

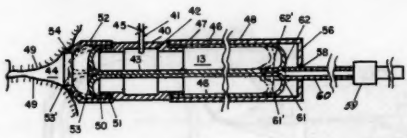
At least one light conducting optical system such as a fiber optical system is provided which extends lengthwise in the wall of the flexible tube with the forward end thereof terminating at the forward end of the flexible tube while the rearward end thereof is adapted to receive the illuminating light from an external light source at a position adjacent to the control body so as to illuminate the trachea into which the flexible tube is inserted by the light transmitted through the light conducting optical system to be forward end thereof for facilitating the insertion of the flexible tube which is now stiffened so as to maintain its rigid straight form into a desired position in the trachea by observing the trachea through the endotracheal tube.

3,669,099

METHOD AND APPARATUS FOR EVERTING A FLEXIBLE PROBE INTO A CAVITY

Daniel Silverman, 5969 South Birmingham, Tulsa, Okla.

Continuation-in-part of application Ser. No. 498,653, Oct. 20, 1965, now Patent No. 3,502,069. This application Dec. 1, 1969, Ser. No. 881,065
Int. Cl. A61b *05/00*
U.S. Cl. 128—2 M **27 Claims**



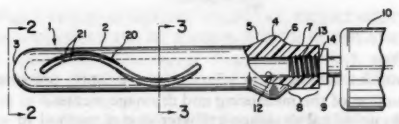
In this invention a flexible thin-walled tubing probe is everted into a body cavity carrying with it a medical instrument which can be a long slender cylindrical means. The length of tubing is everted and folded over itself to provide a double-walled tubing having an outer wall, an inner wall, with an annular space between, and with a central longitudinal passage inside the inner wall. The two ends are sealed to close this volume and means are provided to fill the closed annular volume with a gas or liquid. The sealed tubing ends are attached, sealed to, or held in contact with a short cylindrical, tube which is used as a handle or nozzle, through which the tubing is everted into a body cavity. The long cylindrical element presses on the other folded (back) end of the tubing. This causes fluid to be moved from the back end to the front end, causing the tubing to be everted through the nozzle. The cylindrical element meanwhile moves forward with the tubing, through the nozzle, into the cavity. Various methods of sealing and attaching the tubing to the nozzle are illustrated.

3,669,100

VIBRATING APPARATUS FOR TREATMENT OF FEMALE DISORDERS

George A. Csanad, 14625 Detroit Avenue, Parma, Ohio

Filed June 15, 1970, Ser. No. 46,027
Int. Cl. A61h *1/00*
U.S. Cl. 128—32 **3 Claims**



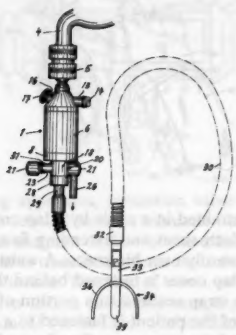
Female disorders in animals are treated by electrically vibrating in the vagina of the animal a generally penis-shaped instrument having means for gradually releasing and distributing medications, such as hormone gels, antibiotics and the like during the vibration process. The instrument is provided with an elongated slot, preferably sinusoidal in character, containing or adapted to contain the medication desired. The vibrational energy penetrates well beyond the contacting surfaces of the vagina and thus assists in the development or redevelopment of certain lazy or degenerated muscles that appear to be responsible for such disorders as female frigidity, certain menstrual or menopausal disorders and the like.

3,669,101

DEVICE FOR THE RINSING OF BODY CAVITIES

Willy Kleiner, Fischmarktplatz 9, 8640 Rapperswil, Switzerland

Filed Mar. 9, 1970, Ser. No. 17,458
Claims priority, application Switzerland, Mar. 11, 1969, 3831/69; Mar. 2, 1970, 2983/70
Int. Cl. A61h 9/00
U.S. Cl. 128—66 7 Claims



A device for rinsing the bucal cavity which comprises a mouthpiece adapted to be fitted into the mouth and provided with discharge ports trained upon the teeth and gums of the user, a connection fitting adapted to be placed upon a faucet spigot, a line connecting the mouthpiece with this fitting, and a control valve along the line for selectively connecting the mouthpiece via a venturi to a dispenser for a mouth-treating liquid, to a discharge port opening into the wash basin, and to the mouthpiece.

3,669,102

ORTHOPEDIC TRACTION APPARATUS

Norman M. Harris, 411 30th Street, Oakland, Calif.

Filed June 9, 1969, Ser. No. 831,427
Int. Cl. A61f 5/04
U.S. Cl. 128—84 R 5 Claims

Traction apparatus for externally splinting the cervical spine to effect fixation thereof. The apparatus is characterized by providing adjustment of the height, tilt, rotation and anterior and posterior position of the patient's head while affording no or only minor inconvenience during anterior or posterior surgical procedures while the traction apparatus is in position on a patient. The traction apparatus includes a skull-gripping mechanism adapted to grip a patient's skull and thereby be fixedly related thereto, a platform or device supporting the skull-gripping mechanism and being inter-connected therewith so as to positively locate one with respect to the other and prevent relative translational and rotational displacements thereof, a plurality of struts interconnecting the platform and a body jacket positioned about a patient, and means for adjusting the lengths of the struts so as to select the magnitude of the tensile stress imparted through the platform and skull-gripping mechanism to the cervical spine of a patient equipped with such body jacket and having such mechanism secured to his skull.

3,669,103

ABSORBENT PRODUCT CONTAINING A HYDROCELLOIDAL COMPOSITION

Billy Gene Harper; Robert Niles Bashaw, and Bobby Leroy Atkins, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 31, 1966, Ser. No. 553,684
Int. Cl. A61l 15/00
U.S. Cl. 128—156 8 Claims

Articles having improved absorbency for aqueous body fluids consist of body-conforming supports containing dry, solid water-swellable, water-insoluble polymeric sorbents which are lightly cross-linked polymers, such as polyvinylpyrrolidones, sulfonated polystyrenes, sulfonated polyvinyltoluenes, poly-sulfoethyl acrylates, poly-2-hydroxyethyl acrylates, polyacrylates, hydrolyzed polyacrylamides and copolymers of acrylamide with acrylic acid.

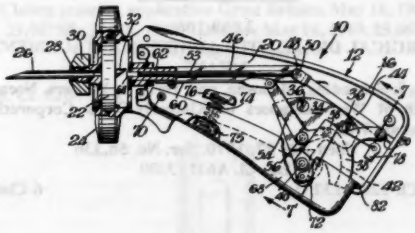
Illustrative of the im55

3,669,104

IMPLANT GUN

James B. Wyatt, Stamford; Peter D. George, Easton, and Kenneth Van Dyck, Weston, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed June 15, 1970, Ser. No. 46,159
Int. Cl. A61m 5/00
U.S. Cl. 128—217 6 Claims



Subcutaneous implant gun for dispensing pellets comprises case with hollow needle attached thereto. Plunger in alignment with hollow needle reciprocates to expell pellets through needle as pellets are positioned in path of plunger travel. Reciprocable bushing in alignment with hollow needle supportingly surrounds plunger. Trigger pivoted to case is connected to reciprocable bushing and plunger, and linkage system between trigger and bushing and plunger causes bushing and plunger to move in direction of hollow needle when trigger is depressed. Bushing and plunger move away from hollow needle when trigger is released.

3,669,105

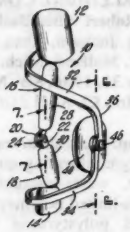
BRACE FOR ARTICULATED LIMBS

Ignatius F. Castiglia, 500 East 77th Street, New York, N.Y.

Filed Oct. 28, 1969, Ser. No. 870,024
Int. Cl. A61f 3/00
U.S. Cl. 128—80 C 12 Claims

A brace for limiting a pair of limbs articulated to each other at a joint therebetween to swinging movement with

respect to each other only about a single axis. Thus, the brace may be a knee brace for limiting upper and lower leg limbs for swinging movement relative to each other only about a single horizontal axis passing through the knee joint. A pair of limb-engaging components are shaped respectively to engage the limbs on one side thereof at locations spaced from the joint, and a pair of arms, which are fixed to these components, extend into overlapping relation at end regions of the arms which are pivoted to each other for limiting them to swinging movement about an axis which will coincide with the single axis about which the limbs will be free to turn. A



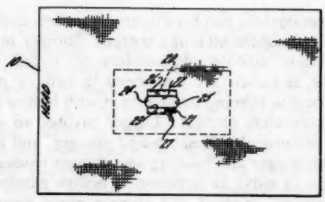
joint-engaging components is adapted to engage the joint at the side of the limbs opposite from the limb-engaging components, and a pair of relatively stiff members extend from the pair of limb-engaging components around to the region of the joint-engaging components where the latter together with these relatively stiff members are pivoted to each other for free swinging movement with respect to each other about an axis which also will coincide with the above single axis. In this way, while the limbs will be free to swing with respect to each other about this single axis which passes through the joint, they are prevented from turning with respect to each other about any other axis.

3,669,106

SURGICAL DRAPE WITH ADHESIVE ATTACHMENT MEANS

Mark S. Schrading, Menosha, and Terry L. Winters, Neenah, both of Wis., assignors to Kimberiy-Clark Corporation, Neenah, Wis.

Filed July 27, 1970, Ser. No. 58,336
Int. Cl. A61f *13/00*
U.S. Cl. 128—132 D **6 Claims**



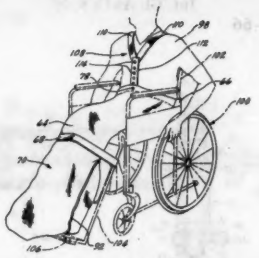
A disposable surgical drape sheet, of the type having a nonwoven sheet for placing over a surgical patient and having a reinforced fenestration area with a fenestration to expose an operative area, is provided with a pair of elongated strips of normally tacky and pressure-sensitive adhesive along one pair of opposed edges of the fenestration. A pair of removable peel strips covering the adhesive strips are removed before using the sheet, thereby exposing the adhesive and permitting the sheet to be secured to the patient.

3,669,107

LAP COVER AND RESTRAINER

John T. Posey, 1739 Meadowbrook Road, Altadena, Calif.

Filed Feb. 25, 1970, Ser. No. 14,043
Int. Cl. A61f *13/00*
U.S. Cl. 128—134 **10 Claims**



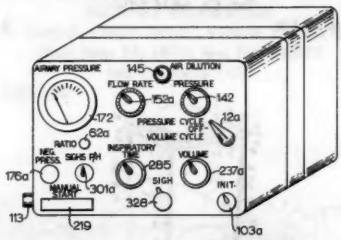
A patient is restrained in a chair by a lap cover preferably made of a terrycloth sheet and extending from the waist of the patient downwardly over his knees. A waist strap secured to the top of the lap cover is fastened behind the back of the chair, and a knee strap secured to a portion of the lap cover below the knees of the patient is fastened to a portion of the chair's lower supporting structure. One form of the lap cover includes an enclosure below the knee strap disposed around the patient's lower legs and feet. A harness can be fastened to the top of the lap cover and extended over the shoulders of the patient and secured behind the back of the chair to hold the patient's upper torso against the back of the chair.

3,669,108

VENTILATOR

Leif J. Sundblom, Castro Valley, and Louis A. Ollivier, Menlo Park, both of Calif., assignors to Veriflo Corporation, Richmond, Calif.

Filed Oct. 20, 1969, Ser. No. 867,804
Int. Cl. A62b *7/02*
U.S. Cl. 128—145.8 **45 Claims**



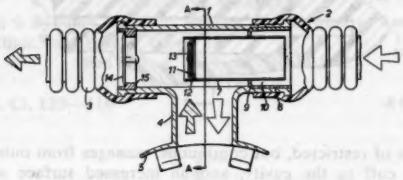
A ventilator capable of both pressure-cycled and volume-cycled operation. A main valve connects a gas supply conduit to a downstream conduit when the pressure in a command signal conduit reaches a first predetermined pressure level and closes off the downstream conduit from the gas supply conduit when the pressure in the command signal conduit drops below a second predetermined pressure level. In the expiratory cycle, the command signal conduit and the downstream conduit are bled to atmospheric. The inspiratory cycle may be initiated (1) by the patient breathing in and thereby lowering airway pressure, or (2) after a time lapse following the commencement of said expiratory phase, the duration of said time lapse being determined as a set multiple of the time of the preceding inspiratory phase. The expiratory phase may be initiated (1) by the achievement of a predetermined airway pressure or (2) upon the delivery of a predetermined volume of gas.

3,669,109

BREATHING APPARATUS

Stanley John Cheffers, Seaford, and Michael Harvey Glynn, Hook, both of England, assignors to Siebe Gorman & Company Limited, Chessington, Surrey, England

Filed July 31, 1969, Ser. No. 846,393
Claims priority, application Great Britain, Aug. 8, 1968, 37,903/68
Int. Cl. A61m *16/00*
U.S. Cl. 128—147 1 Claim



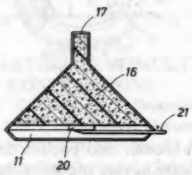
In breathing apparatus, inhalation valve means, which allows gas to be inhaled from an inhalation conduit, is situated directly within the path of flow of the exhaled gas so that, in operation, heat is transferred from the exhaled gas to the inhalation valve means. The flow of warm, exhaled gas over the inhalation valve means raises the temperature of the valve means and reduces the likelihood of ice formation.

3,669,110

COMPRESSIBLE BIOMEDICAL ELECTRODE

George M. Low, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of, and James D. Frost, Jr., 6404 Mobud, Houston, Tex.

Filed Nov. 5, 1970, Ser. No. 87,222
Int. Cl. A61n *1/04*
U.S. Cl. 128—2.1 E 2 Claims



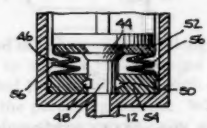
A preferred embodiment of an electrode which incorporates a silicone rubber sponge which is immediately adjacent to a chlorided silver disk carried in a silicone rubber base, the electrode being covered with a thin leak-proof vinyl coating for storing electrolyte solution from the point of manufacture. The sponge rubber holds the electrolyte until it is required at the time of usage. A force on the exterior causes the electrolyte to moisten the skin to provide good ohmic contact with the subject.

3,669,111

AUTOMATIC RETRACTING HYPODERMIC SYRINGE

Ben B. Dubner, 84 Marcus Avenue, New Hyde Park, N.Y.

Filed May 20, 1970, Ser. No. 39,084
Int. Cl. A61m *5/00*
U.S. Cl. 128—218 P 3 Claims



In a hypodermic syringe, automatic retraction, achieved by interposing resilient means between the barrel and the plunger.

3,669,112

ONE-PIECE NIPPLE, PACIFIER AND THE LIKE

Elisabeth Mager, Cologne-Lindenthal; Helga Schulz, and Peter Schulz, both of Heidelberg, all of Germany, assignors to Firma Carl Plaat, Koln, Germany

Filed Jan. 2, 1970, Ser. No. 11
Claims priority, application Germany, Jan. 21, 1969, P 19 02 772.6
Int. Cl. A61j *11/00*; A61f *5/01*; A61j *17/00*
U.S. Cl. 128—252 2 Claims

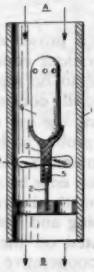
A one-piece nipple, pacifier and the like has a bag-shaped sucking portion, a disc-shaped part engaging the lips, a part located between the two and forming a base of the bag-shaped portion, and an outer part located upon the other side of the disc. The device is particularly characterized in that the base part has a lesser wall thickness than the other parts.

3,669,113

INHALATION DEVICE

Roger Edward Collingwood Altounyan, Wilmslow, England, and Harry Howell, deceased, late of Castle Donnington, England (Eunice Cockburn Howell, executrix), assignors to Fisons, Limited, London, England

Continuation-in-part of application Ser. No. 745,774, July 18, 1968, which is a continuation-in-part of application Ser. No. 532,271, Mar. 7, 1966. This application June 18, 1969, Ser. No. 871,468
Claims priority, application Great Britain, May 16, 1969, 25,067/69; Jan. 8, 1969, 1,206/69; May 16, 1969, 25,069/69; June 7, 1968, 27, 210/68
Int. Cl. A61m *15/00*
U.S. Cl. 128—266 25 Claims

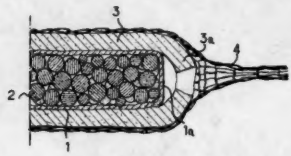


A method and device for dispensing a particulate medicament material from a container. The container provided with at least one powder outlet is rotated by pneumatic means about an axis of the container. The axis of rotation is caused to precess so as to describe a path of precession which is contained within a generally conical surface of precession, and the axis of rotation of the container is at an angle to the axis of the generally conical surfaces of precession. This causes the walls of the container to undergo repeated changes in radial acceleration with respect to the axis of the generally conical surface of precession, which changes of acceleration are of sufficient magnitude to overcome the centrifugal and cohesive forces which hold the particles of powder in place upon the wall of the container.

3,669,114
SANITARY NAPKIN

Bruno P. Morane, Paris, France, assignor to L'Oreal, Paris, France

Filed June 19, 1970, Ser. No. 47,260
Claims priority, application France, June 24, 1969, 6921148
Int. Cl. A61f 13/16
U.S. Cl. 128—290 8 Claims

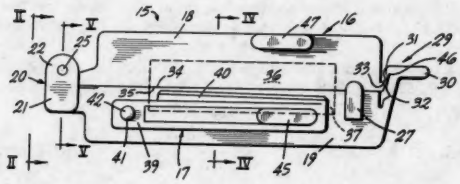


Sanitary napkin comprising a plurality of balls of absorbent material which are movable with respect to each other so that the shape of the napkin may conform to the configuration of the body of the user.

3,669,115
SURGICAL INSTRUMENT WITH TRUNNIONED HINGE MEANS

Frederick J. Melges, Battle Creek, Mich., assignor to Rymel Corporation, Sierra Madre, Calif.

Continuation-in-part of application Ser. No. 19,329, Mar. 13, 1970, which is a continuation-in-part of application Ser. No. 780,463, Dec. 2, 1968, now Patent No. 3,566,873, dated Mar. 2, 1971. This application Mar. 13, 1970, Ser. No. 19,328
Int. Cl. A61b 17/326, 19/08; A44b 21/00
U.S. Cl. 128—305 2 Claims



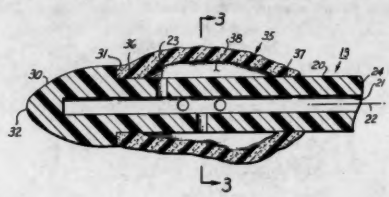
A surgical instrument is provided particularly suited for use in circumcision operations comprising a clamping and holding member adapted to be readily formed of molded plastic material and especially constructed for use in circumcision operations involving the use of conventional hospital instruments such as a probe, scalpel, hemostat, and the clamping and holding member comprising side members pivotally connected at their ends by a novel trunnioned hinge joint. In a preferred form the instrument includes in combination with the clamping and holding member a cutting member pivotally mounted on the clamping and holding member and guided in cooperative operating position, and which instrument is sufficiently inexpensive so that it can be discarded after the end of the operation thereby obviating the need of sterilization for reuse.

3,669,116
DRAINAGE CATHETER WITH ANTI-CLOGGING MEANS

William T. Heyer, Santa Barbara, Calif., assignor to Heyer-Schulte Corporation, Santa Barbara, Calif.

Filed July 6, 1970, Ser. No. 52,655
Int. Cl. A61m 27/00
U.S. Cl. 128—350 R 4 Claims

A physiological drainage catheter comprising an elongated tube with a central axis and a peripheral wall surrounding it. A port passes through the wall to the passage for the purpose of draining fluid from the region surrounding the tube. A peripheral cuff surrounds the wall and is fastened thereto on each side of the port, the cuff ballooning away from the wall to leave a cavity therebetween. The cuff is made of a flexible openpore silicone rubber sponge which provides a large

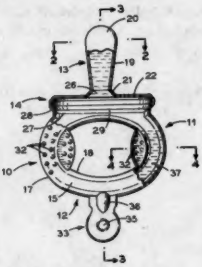


number of restricted, but continuous, passages from outside of the cuff to the cavity, and an increased surface area thereby to screen or filter fluid which reaches the port from regions to be drained outside the cuff to minimize clogging, and by its increased surface area to decrease the possibility of being closed by abutment with surrounding tissue.

3,669,117
COMBINATION TEETHER AND PACIFIER

Murry Herbst, 43 West 23rd Street, N. Floral Park, N.Y.

Filed Apr. 22, 1970, Ser. No. 30,645
Int. Cl. A61j 17/00
U.S. Cl. 128—360 8 Claims

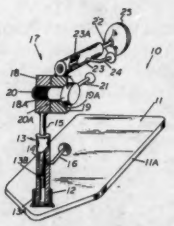


A combination teether and pacifier in the form of a thin walled, flexible body having nipple, guard and teething portions which are hollow and in communicating relation to each other.

3,669,118
UTERINE DISPLACEMENT DEVICE

Miguel Angel Colon-Morales, G.P.O. Box 4547, San Juan, P.R.

Filed Nov. 16, 1970, Ser. No. 89,688
Int. Cl. A61b 17/42
U.S. Cl. 128—361 4 Claims



This disclosure is directed to a mechanical device to effect left uterine displacement to prevent or treat supine hypotensive syndrome in a patient, e.g., during Cesarean Section operations. The device includes an adjustable stanchion

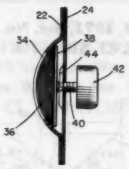
adapted to be suitably supported adjacent a patient to which there is connected an adjustable arm and associated compression means for effecting left displacement of the uterus. The device is constructed for universal adjustment in any of the three axial planes so as to be readily adjusted to any particular patient.

3,669,119

ADJUSTABLE ELECTRODE MEANS FOR A SLEEP INDUCING MACHINE

Paul S. Symmes, Cornwall Heights, Pa., assignor to American Clinic, Inc., Seattle, Wash.

Filed Mar. 4, 1970, Ser. No. 16,441
Int. Cl. A61n *1/04*
U.S. Cl. 128—410 **4 Claims**



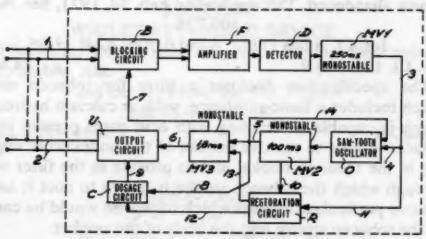
A mask adapted to be worn on the head of a person includes more than two electrodes adapted to couple electrical pulse signals to provide parallel current paths from a pulse source to the head of the person to induce sleep or relaxation. Flexible members couple the signals to different surfaces of the person's head. Adjustment means are associated with at least one of the flexible elements to vary the state of compression thereof and thereby balance the current paths between the two current paths provided by the two electrodes.

3,669,120

DEVICE FOR STARTING OR STIMULATING HEART CONTRACTIONS

Lars Stig Nielsen, Copenhagen, Denmark, assignor to Christian Rovsing A/S, Copenhagen, Denmark

Filed July 9, 1970, Ser. No. 53,557
Claims priority, application Denmark, July 11, 1969, 3765
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 P **7 Claims**



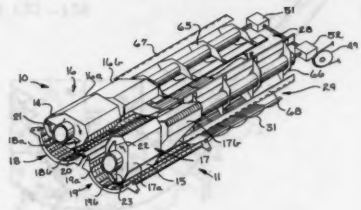
A Pacemaker of the demand type having an output control circuit arranged to control the produced pace impulses in such a manner that the amplitude of each impulse is slightly less than that of the preceding impulse. When the amplitude has decreased below the threshold value so that a heart impulse fails to occur within a predetermined period, a reset circuit will cause another pace impulse to be produced having a given initial amplitude.

3,669,121

AXIAL FLOW THRESHING AND SEPARATING MEANS WITH A LOAD DISTRIBUTING THRESHING ROTOR

Edward William Rowland-Hill, Lancaster, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed June 30, 1970, Ser. No. 51,082
Int. Cl. A01f *7/06*
U.S. Cl. 130—27 T **6 Claims**



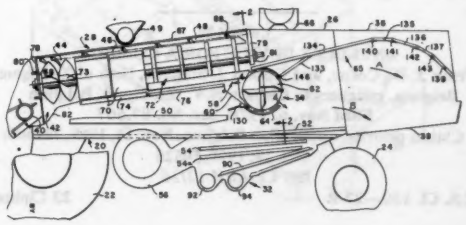
An axial flow threshing and separating rotor of an agricultural combine has a plurality of axially extending threshing means circumferentially arranged to enter the threshing zone at different times for distribution of the threshing load.

3,669,122

AXIAL FLOW COMBINE WITH A ROTARY DISCHARGE

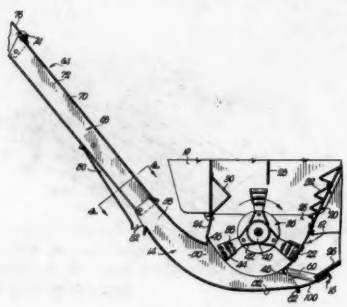
Edward William Rowland-Hill, Lancaster, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Continuation-in-part of application Ser. No. 51,082, June 30, 1971. This application June 10, 1971, Ser. No. 151,682
Int. Cl. A01f *12/44*
U.S. Cl. 130—27 T **16 Claims**



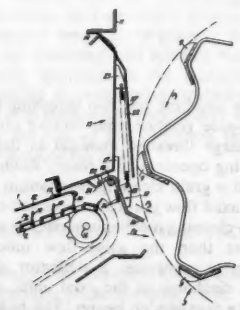
The axial flow combine has two threshing and separating units in side-by-side relation that receive cut crops in the front and discharge threshed material in the rear through downwardly facing openings to a rotary discharge assembly. A grain pan and a grain cleaning mechanism are positioned underneath the axial flow unit to receive and clean separated grain. The grain cleaning mechanism extends rearwardly substantially further than the axial flow units. The rotary discharge assembly comprises a deflector shield pivotally mounted to the discharge of the axial units, a curved transverse grate and a four-bladed beater. The beater is rotatably mounted above the grate to sweep the discharged crop material across the grate and impel it rearwardly in an upwardly curved arc over and rearwardly of the rear end of the grain cleaning mechanism.

3,669,123
STOVER SAVER FOR COMBINES
Melvin V. Gaeddert, Newton, Kans., and Verlin Wiggers, Bancroft, S. Dak., assignors to Hesston Corporation, Hesston, Kans.
Filed Jan. 19, 1971, Ser. No. 107,731
Int. Cl. A01f *12/40*
U.S. Cl. 130—27 R 9 Claims



A chopper unit secured to a combine centrifugally chops and blows residue received from the strawwalkers of the combine downwardly and rearwardly through the open bottom of the chopper housing into an arcuate receptacle having a rearwardly extending, volute eduction tube at one end thereof, and thence through an upwardly and rearwardly extending spout leading from the tube. The lowermost edge of the front wall of the chopper housing is disposed forwardly of the axis of rotation of the chopper and cooperates with the opposite end of the receptacle to define an inlet through which secondary air currents are drawn. Three species of the invention embody alternative forms of agitated feeder slides which deliver stover from the reciprocating shaker shoe of the combine to the inlet where it is drawn into the receptacle and admixed with the chopped residue for subsequent air conveyance through the tube and the spout. The spout is open along the bottom stretch thereof to permit the induction of outside air thereinto as the admixture travels therethrough.

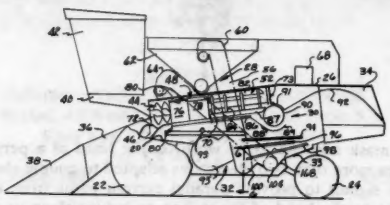
3,669,124
ANTI-DUST DEVICE FOR A COMBINE
Frans J. De Coene, and Gilbert J. Strubbe, both of Zedelgem, Belgium, assignors to Clayson N.V., Zedelgem, Belgium
Filed Nov. 6, 1970, Ser. No. 87,507
Claims priority, application Belgium, Nov. 14, 1969, 741666; Oct. 15, 1970, 50525
Int. Cl. A01f *12/18*
U.S. Cl. 130—27 R 23 Claims



An anti-dust device for a combine having a feeder housing with a discharge end disposed adjacent to a threshing cylinder, the feeder housing including a conveyor for delivering crop material into the threshing cylinder. The anti-dust device includes a plate pivotally mounted transversely between the upper portion of the feeder housing and the threshing cylinder, thereby obstructing the movement of dust from the threshing cylinder back through the feeder housing. The plate is spring biased to normally assume a position in close proximity to the circumference of the threshing cylinder but is moveable outwardly therefrom by the engagement therewith of crop material rotating with the cylinder.

This invention relates to combines and more particular to anti-dust devices for controlling the internal flow of air having dust particles suspended therein.

3,669,125
TAILINGS RETURN DISCHARGE FOR AXIAL FLOW COMBINES
Edward William Rowland-Hill, and Horace G. McCarty, both of Lancaster, Pa., assignors to Sperry Rand Corporation, New Holland, Pa.
Filed June 23, 1971, Ser. No. 155,921
Int. Cl. A01f *7/06*
U.S. Cl. 130—27 T 12 Claims



The tailings return discharge for an axial flow combine feeds tailings to the oppositely and adjacently downwardly rotating feed augers of the respective feed sections of two axial flow units of a combine and has a horizontal conduit, a tailings return auger within the conduit and intermediate and end ducts connecting the conduit to the axial unit feed sections, respectively, for passing tailings into the crop feed. The tailings return auger has a member over the end duct to prevent the accumulation of crop material thrown by the feed auger that is rotating at the duct exit opposite to the direction of feed of the tailings return auger.

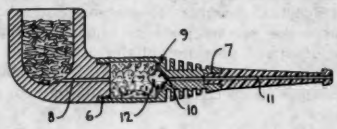
3,669,126
FILTERS FOR TOBACCO SMOKE
Elie Michel Soussa, and Jabbour Habayeb, both of Amman, Jordan, assignors to Lemo Limited, Grand Cayman, British W. Indies
Continuation of application Ser. No. 768,210, Oct. 8, 1968, now abandoned. This application Feb. 24, 1971, Ser. No. 100,736
Int. Cl. A24b *15/02*; A24d *01/06*; A24f *13/06*
U.S. Cl. 131—10.9 3 Claims

The specification discloses a filter for tobacco smoke which includes a basic substance, such as calcium hydroxide, which is capable of reacting with acid gases present in the tobacco smoke to remove certain of the undesirable impurities in the tobacco smoke, and to provide in the filter water through which the tobacco smoke is drawn to cool it and to remove particulate matters which otherwise would be carried by the tobacco smoke into the body of the smoker.

3,669,127
FILTERED TOBACCO PIPE
Kermeth L. Owens, P.O. Box 121, Payson, Ariz.
Filed June 4, 1970, Ser. No. 43,424
Int. Cl. A24f *01/22*
U.S. Cl. 131—194 3 Claims

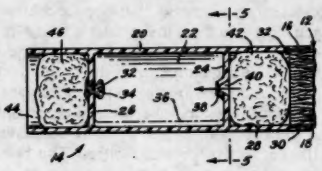
A filtered tobacco pipe is provided with a bowl, a stem and a filter chamber and heat exchanger connecting the bowl and the stem. The filter chamber and heat exchanger is made of

aluminum and provided with fins to efficiently cool the hot smoke and condense the moisture therein. The filter chamber itself is provided with a tapered bore and adapted to



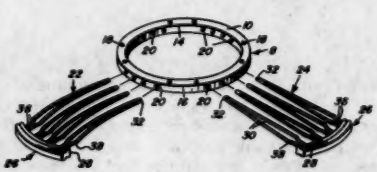
be easily filled with tobacco which absorbs the smoke condensates. An irregular spheroid is placed over the opening to the stem in the tapered end of the filter chamber to prevent the filter material from plugging the opening.

3,669,128
DEVICE FOR FILTERING TOBACCO SMOKE
Joseph H. Cohen, 1110 Venetian Way, Miami, Fla.
Filed Nov. 9, 1970, Ser. No. 87,969
Int. Cl. A24f *01/30, 01/04*
U.S. Cl. 131—261 B **4 Claims**



A device for filtering tobacco smoke, comprising a filter assembly that includes a chamber in which a measured quantity of liquid is contained, the front and the rear wall of the chamber each having an opening formed therein through which smoke is drawn and a plug of filter material located in and extending through the opening in the rear wall, the body of the article on which the device is secured being manipulated prior to the smoking thereof to saturate the material in the opening with the liquid as contained in the chamber, wherein smoke as drawn through the chamber and saturated material is filtered and cooled prior to being inhaled by the smoker. The compartments forward and rearwardly of the chamber may house filters, such as cotton pads, which function to remove additional impurities.

3,669,129
WIGLET ATTACHING DEVICE
David Serebrin, Mobile, Ala., assignor to Venture Enterprises, Inc., Mobile, Ala.
Filed Oct. 1, 1970, Ser. No. 77,295
Int. Cl. A45d *8/00*
U.S. Cl. 132—46 R **6 Claims**

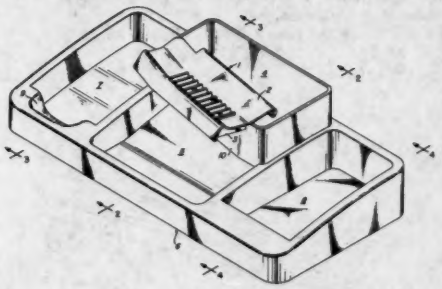


A wiglet positioning and attaching device characterized by a plastic or an equivalent ring or collar having means for anchoring a base-equipped wiglet in a given ready-to-use position. The ring or collar is adapted to encompass a backcombed matted mass of hair and is removably located and held in place with requisite nicety and certainty by the teeth of attachable companion combs. The fabric base of the wiglet is preferably but not necessarily sewn atop the ring by way of threads which are threaded through holes provided therefor in the ring.

3,669,130
HAIR COMBS
Frank G. Petroczky, 416 N. Maple Avenue, Oak Park, Ill.
Filed June 16, 1971, Ser. No. 153,693
Int. Cl. A45d *24/04*
U.S. Cl. 132—138 **8 Claims**

The hair combs have two sets of curved teeth, the two sets being aligned in alternating sequence. The curvature of the teeth of the respective sets of teeth is in opposite directions and the teeth of one set cross the teeth of the other set. At the outer or free end of the teeth, prongs are provided.

3,669,131
COIN COUNTING AND ROLLING APPARATUS
James W. Parker, 3344 East Weldon, Phoenix, Ariz.
Filed Sept. 30, 1970, Ser. No. 76,715
Int. Cl. G07d *9/00*
U.S. Cl. 133—8 A **3 Claims**



In order to facilitate and expedite manual counting and rolling of bulk coins of a given denomination, apparatus is provided for semiautomatically grouping bulk coins into small equal groups, each group constituting a predetermined fraction, such as one-tenth of a roll. The apparatus consists generally of two counter-members hinged together with the upper member having a predetermined number of compartment openings dimensioned to accept the number of coins corresponding to the above-mentioned fraction of a roll and the lower member having a channel disposed beneath the compartment openings of the upper member. In operation, bulk coins of the appropriate denomination are manually worked into the compartment openings until all have accepted the maximum number of coins. The upper member is then swung away leaving the number of coins constituting a roll laying in the channel of the lower member from which they may be manually slid into a coin wrapper. To change coin denomination, the unit comprising the upper and lower

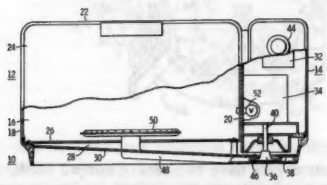
counter members is removed from a base and replaced with a similar unit with appropriately dimensioned compartment openings for receiving the new denomination to be counted. The base has three compartments including a first, central compartment for storing uncounted coins and including the support for the counter apparatus, a second compartment for storing coin wrappers where they are easily accessible, and a third compartment for storing rolled coins.

3,669,132

DISHWASHING APPARATUS

Wesley Mamrose, Magnus Lane R.D. #5, Irwin, Pa.

Filed Sept. 29, 1970, Ser. No. 76,560
Int. Cl. B08b *3/02, 15/00*
U.S. Cl. 134—58 D 3 Claims



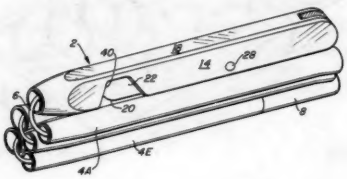
A dishwasher arrangement in which food particles separated from the articles being washed are separated from the water being circulated to effect the washing by momentarily stopping the circulation of the water in the washing chamber to permit the level of water in the sump to rise sufficiently to sweep the food particles out of an opening provided in a washing chamber wall.

3,669,133

COLLAPSIBLE ROD

Joseph Hyman, Newton Center, Mass., assignor to Hycor, Inc., Woburn, Mass.

Filed June 8, 1971, Ser. No. 44,239
Int. Cl. A45b *9/00*
U.S. Cl. 135—45 16 Claims



A collapsible rod structure adopted to be used as a cane, the structure comprises a plurality of tubular sections tethered together by a cord and separable to form a compact bundle.

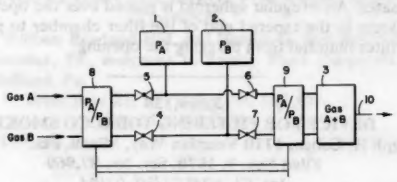
3,669,134

METHOD FOR MIXING PRESSURE GASES PARTICULARLY FOR RESPIRATORS AND MEDICAL DEVICES

Gunter Dobritz, Lubeck, Germany, assignor to Dragerwerk Aktiengesellschaft, Lubeck, Germany

Filed June 11, 1970, Ser. No. 45,372
Claims priority, application Germany, June 20, 1969, P 19 31 354.3
Int. Cl. G05d *11/00*
U.S. Cl. 137—7 2 Claims

In a method for mixing two gases in a predetermined ratio, the two gases are supplied to respective chambers, having fixed or adjustable preselected volumes, through respective first pressure regulators while maintaining the discharge pressures of the two first pressure regulators in such predetermined ratio. The flow of the two gases to the chambers is then interrupted, and the two gases are thereafter discharged from the respective chambers to a common discharge line through respective second pressure regulators while maintaining the discharge pressures of the two second pressure regulators in such predetermined ratio. The apparatus includes adjustable means for conjointly adjusting both the first



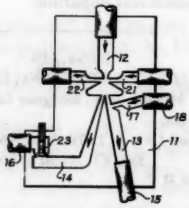
and second pressure regulators so that the discharge ratios thereof are equal and equal to the predetermined ratio. A reversing shut-off valve may be used to connect the chambers to the first pressure regulators or to discharge the chambers through the second pressure regulators. A magnetically biased torsion resistant lever may be used to commonly bias the pressures of the first and second pressure regulators and also to adjust the respective pressure ratios. The respective first and second pressure regulators for each gas may be combined into a single unit.

3,669,135

FLUIDIC DEVICE FOR MODULATING THE TEMPERATURE OF COOLING LIQUID IN A GARMENT

James B. Starr, St. Paul, Mich., assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 24, 1970, Ser. No. 92,366
Int. Cl. F15c *1/14*
U.S. Cl. 137—81.5 3 Claims

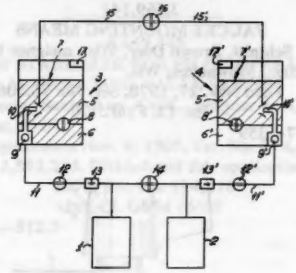


A fluidic device for controlling the temperature of cooling liquid in a garment, such as a space suit. A power port is provided through which cold fluid enters the device and first and second output ports are provided. The first output port is connected to tubes in the garment and the second output port is vented to a return system. A warm water port is connected to the first output port and first and second control ports are provided for controlling the amount of cold fluid entering the first output port. An adjustable valve is provided in the second output port for varying the resistance to flow of liquid through the second output port.

3,669,136
FUEL DELIVERY SYSTEM FOR A PLURALITY OF AIRCRAFT ENGINES

Giorgio Parenti, Parma, Italy, assignor to Sini-Marchetti S.p.A., Varese, Italy

Filed Mar. 26, 1970, Ser. No. 23,066
Claims priority, application Italy, Mar. 25, 1969, 14516 A/69
Int. Cl. G05d 7/06
U.S. Cl. 137—113 3 Claims

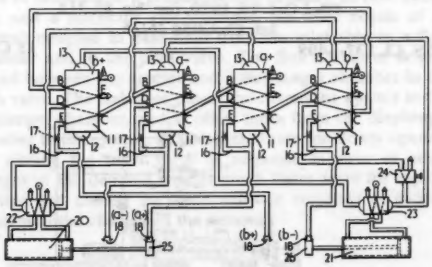


In an aircraft, a fuel tank is provided for each engine and a fuel feed pump in each tank feeds fuel from the tank to the associated engine. A fuel ejector in each tank returns fuel to the tank and a fuel conduit connects the fuel pump and fuel ejector to the associated engine. A fuel transfer circuit interconnects the tanks and a normally closed valve therein prevents fuel transfer from one tank to the other. A switch in each tank is responsive to the fuel level therein and opens the valve to transfer fuel when the fuel level in the tank reaches the switch.

3,669,137
FLUID ACTUATED PISTON VALVE

Colin John Kirk, "Whispers," 125 Dukes Ride, Crowthorne, England

Filed Aug. 14, 1970, Ser. No. 63,861
Claims priority, application Great Britain, Aug. 26, 1969, 42,403/69
Int. Cl. F15b 21/02
U.S. Cl. 137—119 4 Claims

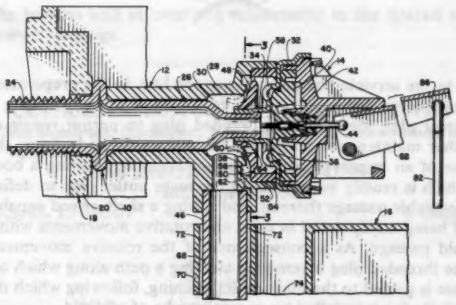


A piston valve of the kind in which a piston is movable longitudinally of a housing having ports for fluid to be controlled by the piston between two operative positions in each of which at least some of said ports are interconnected in different pairs through passages in the piston, by actuating fluid pressure applied to the end of the piston appropriate to the movement required, the actuating fluid pressure for effecting the movement in one direction being applied from a source externally of the valve and the actuating fluid pressure for effecting movement in the other direction being derived from one of said ports when the piston has been moved in said one direction. Said one port is connected to an end portion of the housing adjacent the relevant end face of the piston through a restricted passage and a closable control orifice leads from the passage between the restriction therein and said end portion of the housing, the control orifice being openable to prevent the actuating fluid pressure from rising sufficiently to effect movement of the piston in said other direction and closable to permit the actuating fluid pressure to reach a value sufficient to effect movement of the piston in said other direction when said movement is to be effected.

3,669,138
BALL COCK CONSTRUCTION INCLUDING HORIZONTAL INLET MOUNTING AND ANTI-SYPHON DEVICE

Adolf Schoepe, 1620 North Raymond Avenue, Fullerton, Calif., and Fredric E. Schmuck, 535 Century Drive, Anaheim, Calif.

Filed July 2, 1970, Ser. No. 51,897
Int. Cl. F16k 45/00
U.S. Cl. 137—218 5 Claims



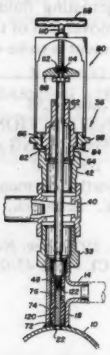
A horizontally extending water inlet body is mounted through a sidewall of a toilet flush tank above the tank upper water level and an inner end portion thereof is telescoped by a water outlet body with a water valve positioned between inner ends of said bodies. An annular water outlet chamber formed between inner end portions of the inlet and outlet bodies is downwardly connected communicating with a generally vertical water outlet tube projecting downwardly, preferably to below a flush tank lower water level. A float telescopes the water outlet tube guided thereby in upward and downward movement with the flush tank water level, the float controlling the valve through a generally horizontally extending pivotal acuating arm on the valve connected to the float through a vertical connecting link. A water chamber of the float is compacted in the float portion telescoping the water outlet tube to give float balanced movement despite float horizontal projection therefrom and connection to the valve actuating arm horizontally spaced from the water outlet tube guiding. A frusto-conical, resilient material, anti-syphon member is positioned within the annular water outlet chamber of the water outlet body normally sealing inwardly against the water inlet body, but annularly expanding away from the water inlet body upon water under pressure being admitted through the valve into the water outlet chamber and downwardly through the water outlet tube. During such annular expansion of the frusto-conical member, the walls thereof seal air relief openings through the water outlet body communicating with the air in the flush tank above the upper water level thereof, but in non-expanded condition of the frusto-conical member, attempted syphoning air forces against the upstream side of the frusto-conical member may draw air through an air vent opening of said frusto-conical member and from the tank air through the outlet body air relief openings to relieve any syphoning forces upwardly through the water outlet tube.

3,669,139

SERVICE TOOL FOR GAS MAINS

George Gajdos, 200 Lexington Avenue, Oyster Bay, N.Y.

Filed Oct. 26, 1970, Ser. No. 83,873
Int. Cl. B23b *41/08*; F16e *41/04*
U.S. Cl. 137—317 12 Claims



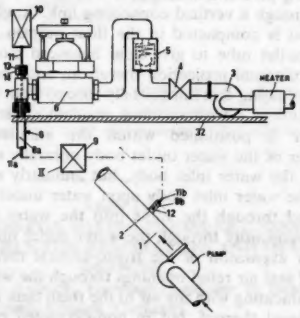
In the servicing of gas mains or the like, in the preparatory procedures for which a seal is achieved by substituting a thrust plug for a rotary, threaded plug to permit repair or other maintenance service to the main without leakage, the use of an improved service tool or apparatus having a body which is readily assembled on the main outlet pipe to define a sealable passage thereon, and having a shaft or rod capable of being manipulated in axial and rotative movements within said passage. As a consequence of the rotative movement, the threaded plug is removed clearing a path along which access is gained to the main outlet opening, following which the thrust plug is installed by an axial stroke of said rod.

3,669,140

SUCTION DREDGING INSTALLATION

Romke van der Veen, Jutphaas, Netherlands, assignor to N.V. Ingenieursbureau Voor Systemen En Octroolen Spanstaal, Rotterdam, Netherlands

Continuation of application Ser. No. 817,719, Apr. 21, 1969, now abandoned. This application Feb. 16, 1971, Ser. No. 115,816
Int. Cl. F16k *49/00*
U.S. Cl. 137—334 8 Claims



Suction dredging installation is provided comprising a convey pipe for conveying a suspension of dredging spoil and water, said convey pipe being provided with at least one pump;

a purgative source connected by means of a purgative conduit to at least one measuring point;

at least one pressure sensitive element connected by means of a tactile conduit with said purgative conduit.

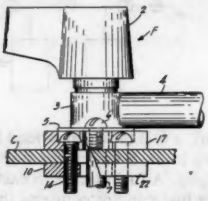
The suction dredging installation is characterized in that the tactile conduit is mounted for a considerable part of its length in the purgative conduit of said measuring point, resulting in a simplification of assembling the conduits, and a protection against damage and an insulation against excessive cooling of the tactile conduit.

3,669,141

FAUCET MOUNTING MEANS

William C. Schmitt, Brown Deer, Wis., assignor to Milwaukee Faucets, Inc., Milwaukee, Wis.

Filed Nov. 27, 1970, Ser. No. 93,006
Int. Cl. F16l *5/00*
U.S. Cl. 137—359 1 Claim



Means for mounting a faucet on a counter top, vertical wall or other surface, and without the necessity of having any access space on the other side of the surface. The means includes a threaded back-up plate which can be inserted in an opening in the counter top or other surface for positioning on the other side of the surface, and which can be securely attached to a mounting plate located on top of the counter or other surface.

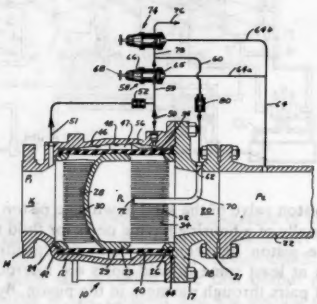
A method of mounting a faucet on and from one side of a surface.

3,669,142

EXPANSIBLE TUBE VALVE WITH LOW PRESSURE BLEED

Charles C. Gerbic, San Anselmo, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.

Filed Oct. 16, 1970, Ser. No. 81,311
Int. Cl. G05d *16/16*
U.S. Cl. 137—489 15 Claims



A pressure regulating system including a main valve with an expansible tube stretched over a cylindrical barrier so that flow occurs around the barrier only when a pressure fluid in a control chamber around the tube is overcome by upstream

pressure. A pilot valve senses downstream pressure and opens when it drops to a predetermined level to exhaust the control chamber to a low pressure zone. Flow around the barrier is increased by evacuating the control chamber to a zone within the valve housing at a pressure lower than downstream. This occurs in a zone wherein the static pressure of the downstream fluid line is converted by the flowing stream to a high velocity, low static pressure. In areas where an atmospheric bleed is not objectionable, a second pilot valve may be provided to exhaust the control chamber to atmosphere if downstream pressure drops to a set lower level.

3,669,143

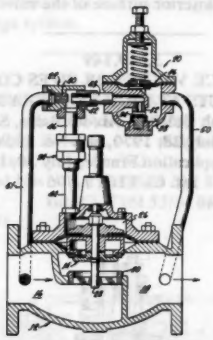
FLOW STABILIZER FOR PILOT-OPERATED MODULATING VALVE SYSTEM

James R. Reese, Santa Ana, Calif., assignor to Cal-Val Co., Costa Mesa, Calif.

Original application Nov. 6, 1969, Ser. No. 874,449, now Patent No. 3,592,223. Divided and this application Feb. 10, 1971, Ser. No. 114,216

Int. Cl. G05d *16/00*

U.S. Cl. 137—512.3 **9 Claims**



The valve system comprises a main valve including a diaphragm-operated poppet separating an inlet side from an outlet side, a pilot valve for opening and closing the main valve in response to a predetermined pressure or flow condition, and a restrictor (for example, the inlet nozzle of an ejector) coupled to pass fluid from the inlet side to a flow stabilizer and to the pilot valve. The flow stabilizer is connected between the ejector and a diaphragm chamber in the main valve. The stabilizer passes fluid from the ejector to the diaphragm chamber, and at other times from the diaphragm chamber to the ejector, at a restricted rate for slowly opening and closing the main valve in response to slow or small changes in the demand, and at much faster rates for rapidly opening and closing the main valve in response to sudden and substantial changes in the demand.

3,669,144

OIL FILTER

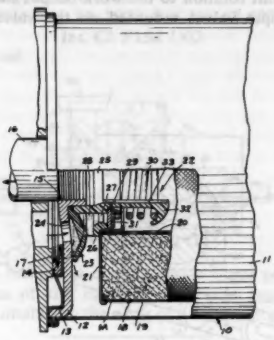
Robert Palmai, Preston, Ontario, Canada, assignor to Sheller-Globe Corporation, Detroit, Mich.

Original application Dec. 4, 1968, Ser. No. 781,135. Divided and this application June 8, 1970, Ser. No. 56,995

Int. Cl. F16k *15/14*

U.S. Cl. 137—525 **2 Claims**

An oil filter including a casing having a filter element therein. The casing has a bottom wall with a centrally located egress opening and a plurality of circumferentially spaced entrance openings surrounding the egress opening. A pressure relief valve is interposed between the lower end of the filter element and the egress opening and a resilient anti drain back valve is interposed between the back pressure valve and



the bottom wall in overlying relationship to the spaced entrance openings.

3,669,145

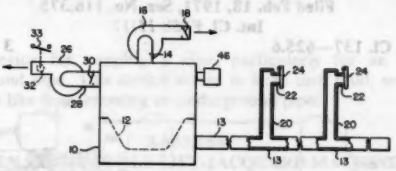
CENTRAL VACUUM CLEANER CONTROL SYSTEM

Allan Holstrom, Rochester, N.Y., assignor to Fasco Industries, Inc., Rochester, N.Y.

Filed June 22, 1970, Ser. No. 47,994

Int. Cl. A47l *5/38*

U.S. Cl. 137—567 **6 Claims**



A secondary, smaller vacuum pump is connected to the system's dust collecting tank to maintain a predetermined, minimum vacuum in the tank when the primary vacuum pump is not in use. When one of the covers sealing the system's several outlets is removed to insert a cleaning attachment, the sudden rush of atmospheric pressure into the tank momentarily closes a first pressure switch, which actuates the primary pump. The primary pump motor is kept energized through a holding circuit including a normally-closed pressure switch, which finally opens and deenergizes the motor for the primary pump, when the system pressure has been lowered to a predetermined minimum value. The secondary pump, nevertheless, continues to run.

3,669,146

POWER ASSISTED STEERING SYSTEM

Frederick J. Adams, Campton, near Shefford, England, assignor to Cam Gears Limited, Hitchin Hertfordshire, England

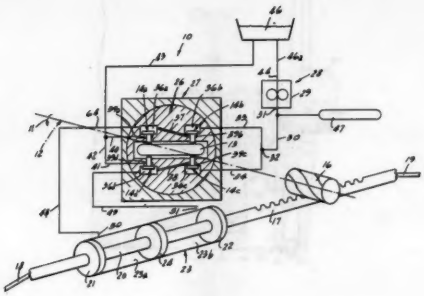
Filed Jan. 23, 1970, Ser. No. 5,295

Int. Cl. F16k *11/14*

U.S. Cl. 137—596.2 **3 Claims**

A power assisted rack and pinion vehicular steering system in which a double acting hydraulic power cylinder is connected to the rack. A power fluid pump is connected to the hydraulic cylinder through a manually operated torque-transmitting and torque-responsive control mechanism including a housing, a rotatable work input shaft adapted to receive a

steering wheel, a rotatable work output shaft on which the pinion is formed, a torsion rod connected fast at opposite ends to the work input and output shafts, a valve sleeve connected for joint rotation to the work output shaft and a plurality of poppet valves mounted on the valve sleeve. The



work input shaft is so constructed and arranged to actuate the poppet valves in response to relative rotation between the work input and output shafts and to control the flow of fluid between the pump and the hydraulic cylinder to move the rack in a direction corresponding to the direction of rotation of the work input shaft.

3,669,147

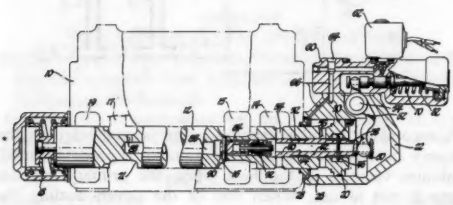
POWER TRANSMISSION

Robert G. Farrell, Royal Oak, Mich., assignor to Sperry Rand Corporation, Troy, Mich.

Filed Feb. 18, 1971, Ser. No. 116,375

Int. Cl. F15b *15/17*

U.S. Cl. 137—625.6 **3 Claims**



A power assisted directional control valve for hydraulic power systems has a sliding spool actuated by a differential piston. A follow-up valve is telescoped within the spool and controls the admission and release of pilot pressure fluid to and from the large side of the actuating piston. To enable the main spool to be shifted in the event of failure of the pilot pressure supply, an auxiliary pilot valve is opened upon overtravel of the normal pilot valve and admits pressure fluid trapped by the main spool to both sides of the actuating piston.

3,669,148

BYPASS VALVE FOR FLUID TREATING ASSEMBLY

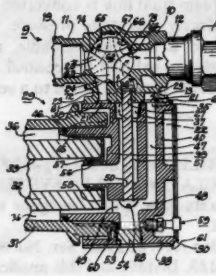
Robert Burkhalter, Jr., Fort Atkinson, Wis.; Don Edward Heskett, Villa Park, and Frank Kryder Hoover, Evanston, both of Ill., assignors to Morton-Norwich Products, Inc., Chicago, Ill.

Filed Nov. 24, 1969, Ser. No. 879,378

Int. Cl. F16k *11/02*

U.S. Cl. 137—625.29 **11 Claims**

In a bypass valve adapted to selectively bypass a fluid treating assembly while a fluid treating element is removed and replaced, a single operating member controls the bypass function, simultaneously isolating the fluid treating assembly. The bypass valve housing has concentric inlet and outlet ports, and is connected to the fluid treating assembly with a



single bolt, coaxial with the ports. The operating member permits mounting of a control knob on either of two opposite sides of the valve housing. The valve mechanism incorporates a single gasket for sealing between the edges of three spaced valve vanes and an interior surface of the valve.

3,669,149

DIRECT SLUICE VALVE FOR PIPES CONVEYING PRODUCTS AT HIGH TEMPERATURE

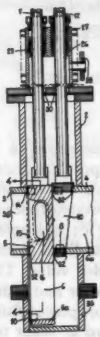
Robert Julien Joseph Guichon, Aix-les-Bains, Savoie, France

Filed July 28, 1970, Ser. No. 58,961

Claims priority, application France, July 30, 1969, 6925638

Int. Cl. F16k *11/06*

U.S. Cl. 137—625.48 **2 Claims**



A valve of the direct sluice type for high temperature applications including a cooperating closing member and an associated wedge for protecting the valve seating in its open position from injury caused by the conveyed fluids tending to adversely affect the seating. The valve is also adapted to facilitate the evacuation of products reverting from a decoking of a distillation column without opening the valve during the processing or cracking gas of petroleums under high temperature.

3,669,150

HYDRODYNAMIC SURGE ABSORBING APPARATUS

Wilhelm Sydow Everett, Santa Paula, Calif., assignor to American Air Filter Company, Inc.

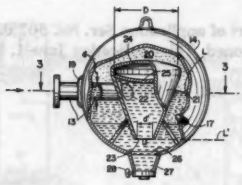
Filed Mar. 19, 1970, Ser. No. 20,910

Int. Cl. F16l *55/04*

U.S. Cl. 138—26 **7 Claims**

A hydrodynamic surge absorbing apparatus for connection

to a header pipe in a sewage piping system comprises a closed spherical vessel incorporating a swirl chamber in the form of an inverted truncated cone. This cone has an upper tangential inlet connected to the header pipe and a lower central outlet at the truncated apex portion communicating with the interior of the vessel at a level below liquid normally filling a portion of the vessel. Surges in the header pipeline of



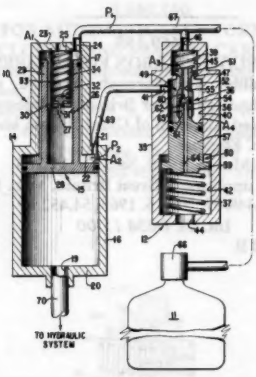
the system result in liquid flow through the swirl chamber into the vessel to compress air or gas above the liquid in the vessel and liquid flow out of the vessel back up through the surge chamber to the line the resistance to such flow being controlled by the geometry of the swirl chamber and gas pressure in the vessel so as to effectively absorb the surges in the piping sewage system.

3,669,151

HYDRAULIC SYSTEM ACCUMULATOR ARRANGEMENT

William T. Fleming, Boonton, N.J., assignor to Kiddle, Walter & Company, Inc., Belleville, N.J.

Filed Nov. 25, 1969, Ser. No. 879,851
Int. Cl. F16l *55/04*
U.S. Cl. 138—31 **9 Claims**



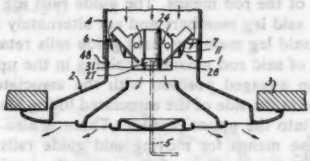
An accumulator arrangement for providing constant pressure high flow rates in hydraulic systems. The accumulator piston has a piston area directly connected to a container of pressurized gas and an annular piston area of larger diameter which is connected to the container through a pressure regulator. The regulator senses the container pressure and the pressure acting on the annular piston area and increases the pressure on the annular piston area as the container pressure decreases during expansion. Between high flow periods, when the accumulator is refilled by hydraulic fluid under pressure, the gas acting on the small diameter piston is recompressed and forced back into the container and the gas acting on the annular piston area is vented to the atmosphere through the regulator.

3,669,152

BUTTERFLY DAMPER

Lawrence M. Peterson, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed Aug. 10, 1970, Ser. No. 62,407
Int. Cl. F15d *1/02*
U.S. Cl. 138—46 **9 Claims**



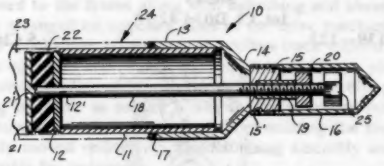
A butterfly damper is operated by a worm gear mounted on the blades of the damper, the blade assembly being separably mountable on the neck of a discharge unit.

3,669,153

PIPE CAP

Cletus Weaver, 1215 Spring Street, Michigan City, Ind.

Filed Sept. 29, 1969, Ser. No. 861,857
Int. Cl. F16l *57/00*
U.S. Cl. 138—89 **2 Claims**



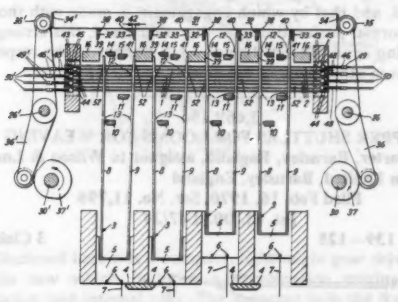
A device for capping a pipe, particularly for an underground pipe. This device serves to keep dirt, mud, water and the like from entering an underground pipe.

3,669,154

OPEN SHED DOUBLE LIFT-JACQUARD MACHINE

Heinz Horak, Huttwil, Switzerland, assignor to Apparatefabrik AG Huttwil, Huttwil, Bern, Switzerland

Filed Feb. 16, 1971, Ser. No. 115,465
Claims priority, application Switzerland, Feb. 19, 1970, 2358/70
Int. Cl. D03c *3/08*
U.S. Cl. 139—63 **4 Claims**



There is disclosed an open shed double lift-Jacquard loom, comprising lifting blades and open shed blades, a plurality of rod means each possessing two resilient leg members positioned to cooperate with said blades. Each leg member is equipped with two tongues respectively cooperating with an associated lifting blade and open shed blade, and a drive

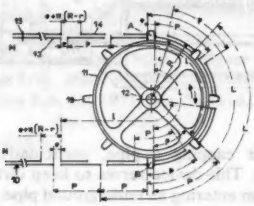
mechanism and guide means provided for the open shed blades serves to move said open shed blades alternately at an inclination up and down with respect to said rod means, so that the rod means remaining in the open shed position always come into engagement with an associated open shed blade. Punching needles are arranged transverse to the leg members of the rod means for selectively acting upon the individual leg members, and guide rails are associated with the leg members of the rod means. The guide rails are movable transverse to said leg members and act alternately upon the free ends of said leg members, said guide rails retaining the leg members of said rod means remaining in the upper shed position in an engaged position with the associated lifting blades thereof at the side of the associated lifting blade which is ascending into the upper position. There is also provided guide rail-drive means for moving said guide rails prior to reaching the upper position of the upwardly moving lifting blades towards such associated upwardly moving lifting blades and away from the lifting blades moving downwardly.

3,669,155

WEAVING MACHINES WITH CONTINUOUS WEFT FEED

Raymond Dewas, 120 Boulevard de Saint-Quentin, Amiens, France

Filed Apr. 27, 1970, Ser. No. 32,131
Claims priority, application Luxembourg, Apr. 30, 1969, 58543
Int. Cl. D03d *47/18*
U.S. Cl. 139—123 **5 Claims**



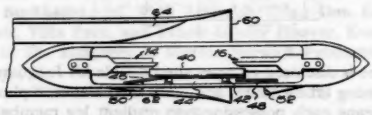
The arrangement according to the invention consists in the provision, over at least one part of the length of one of the strips of which the tape consists, of perforations corresponding to the dimensions and to the pitch of the teeth of the wheel on the engaging radius of the said strip, while the corresponding perforations of the other band or bands are given an additional length of a magnitude and direction corresponding to the difference in length between the engaging arc, based on the middle fiber, by which engagement is made with the strip or strips having enlarged perforations, on the one hand, and that by which engagement is made with those having normal perforations, on the other hand, this arrangement being applicable in the converse manner to the respective strips in other parts of the tape.

3,669,156

GRIPPER SHUTTLES FOR LOOMS FOR WEAVING

Ian S. Porter, Barnsley, England, assignor to Wilson & Longbottom Limited, Barnsley, England

Filed Feb. 16, 1970, Ser. No. 11,796
Int. Cl. D03d *47/24*
U.S. Cl. 139—125 **3 Claims**



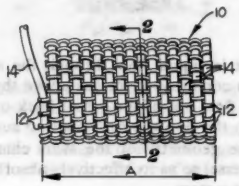
A weaving loom gripper shuttle with an elongated body having a recess in the top containing two pairs of weft gripper jaws. Two pivotable cam levers project outwardly from a side of the body and are moved inwardly to open the jaws when the cams contact a side of a shuttle box.

3,669,157

SHRINKABLE TUBULAR FABRIC

Hubert C. Woodall, Jr., Winston Salem; Horace L. Freeman, Burlington, and Noah C. Goodman, Winston Salem, all of N.C., assignors to Carolina Narrow Fabric Company, Winston Salem, N.C.

Continuation-in-part of application Ser. No. 502,028, Oct. 22, 1965, now abandoned. This application June 1, 1970, Ser. No. 41,997
Int. Cl. D03d *3/02*
U.S. Cl. 139—387 **1 Claim**



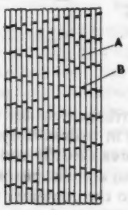
A woven tubular fabric which is formed of a set of warp yarns extending longitudinally thereof and a filling yarn interwoven with the warp yarns and extending circularly around the tubular fabric. The filling yarn is heat shrinkable while the set of warp yarns is non-shrinkable so that the woven tubular fabric will shrink in a radial direction upon the application of heat, while the longitudinal dimension remains unchanged.

3,669,158

CONTINUOUS CARBON FIBER TAPES

Leslie Nathan Phillips, Farnborough, England, assignor to Minister of Technology in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Mar. 6, 1970, Ser. No. 17,265
Claims priority, application Great Britain, Mar. 10, 1969, 12,448/69; Nov. 6, 1969, 54,452/69
Int. Cl. D03d *15/00*
U.S. Cl. 139—420 R **10 Claims**



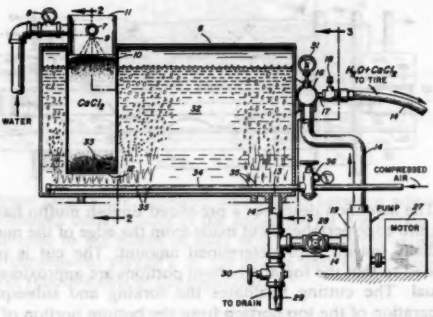
Tape containing continuous high strength high modulus carbon fibers and optionally also glass fibers suitable for use as prerimpregnated tape in mechanical winding processes is disclosed wherein there is a light cross-weave of 1–10 filaments of fine glass fiber at a frequency of about 10–2 threads per inch.

3,669,159

METHOD AND APPARATUS FOR INTRODUCING LIQUID INTO VEHICLE TIRES

Roy L. Owens, Jr., 602-608 18th Street, Corbin, Ky.

Filed Aug. 5, 1970, Ser. No. 61,151
Int. Cl. F17c *13/02*
U.S. Cl. 141—1 6 Claims



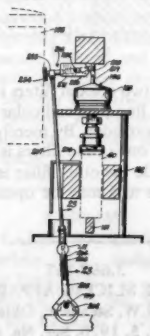
A device for filling tires with a solution of calcium chloride in water comprising a vessel having inlet means adapted to continuously introduce liquid into the vessel, outlet means adapted to continuously remove liquid from the vessel, and means for transmitting the liquid from the vessel to a tire. A mesh hopper is disposed within the vessel beneath the liquid inlet means. The mesh hopper is adapted to retain particulate material but is readily pervious to liquid.

3,669,160

MACHINE FOR AUTOMATICALLY FORMING, FILLING, CLOSING AND SEALING CARTONS

Robert J. Mistarz, Northbrook, Ill., assignor to Cherry-Burell Corporation, Chicago, Ill.

Original application Nov. 9, 1964, Ser. No. 409,911, now Patent No. 3,405,505. Divided and this application July 26, 1968, Ser. No. 754,136
Int. Cl. B65b *43/42*; B67c *3/00*
U.S. Cl. 141—160 5 Claims



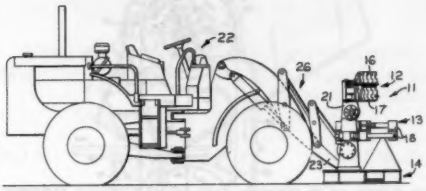
This invention relates to a filler unit for a machine for automatically forming, filling, closing and sealing cartons.

3,669,161

DRIVE MECHANISM FOR TREE HARVESTERS

Nathan Gutman, Washington; Raymond L. Moser, Tremont; Dorrance Oldenburg, Peoria, and Donald E. Sunderlin, Washington, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed July 27, 1970, Ser. No. 58,465
Int. Cl. A01g *23/02*
U.S. Cl. 144—3 D 15 Claims



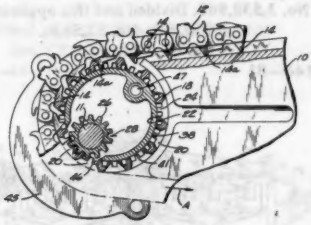
A drive mechanism for a tree harvester including a frame movably mounted on a vehicle, the drive mechanism being secured to the frame along with delimbing and shear assemblies arranged on opposite sides of the drive mechanism, the drive mechanism comprising an endless track trained about a drive sprocket and rollers, the rollers supporting a portion of the track in alignment with the delimbing assembly, grapples being operable to secure a tree in driven engagement with the supported track portion while permitting the tree to be axially moved relative to the delimbing assembly and shear assembly for processing.

3,669,162

CHAIN SAW WITH GEAR DRIVE

Finn T. Irgens, Milwaukee, Wis., assignor to Outboard Marine Corporation, Waukegan, Wis.

Filed Apr. 3, 1970, Ser. No. 25,526
Int. Cl. B27b *17/08*
U.S. Cl. 143—32 R 4 Claims



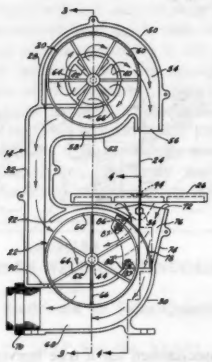
Disclosed herein is a compact, lightweight gear drive for a chain saw which includes a combination cutting chain sprocket and internal gear. The sprocket is in the form of a ring with a plurality of internal teeth which mesh with the teeth of a pinion gear located within the sprocket and driven by the engine. The sprocket has through recesses in its periphery to receive the drive tangs of the cutting chain. In one embodiment, the chain sprocket is supported in eccentric relation to the output shaft of the engine by a hub located interiorly of the internal teeth on the sprocket.

3,669,163

BAND SAW WITH SAWDUST EJECTION MEANS

Herbert R. Crane, 6803 Kingsbury Boulevard, Saint Louis, Mo.

Filed Apr. 15, 1970, Ser. No. 28,842
Int. Cl. B27b *13/02*
U.S. Cl. 143—157 A 7 Claims



A band saw in which vertically spaced wheels driving the band serve as centrifugal impellers and the housing portions enclosing the wheels have volute form, the upper housing portion having a central inlet and an outlet directing air downward to the work area, the lower housing portion including inlet passage means leading from the work area to the central portion thereof, and an outlet remote from the work area directing air and sawdust exteriorly of the housing.

ERRATUM

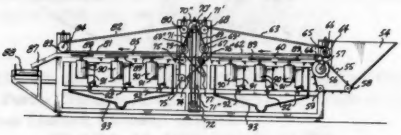
For Class 144—3 D see:
Patent No. 3,669,161

3,669,164

DUAL BELT MACHINE FOR TRIMMING PROJECTIONS FROM GLOBULAR ARTICLES

James P. Cox, Burnaby, British Columbia, Canada, assignor to John Inglis Frozen Foods Company, Modesto, Calif.

Original application Feb. 21, 1968, Ser. No. 707,152, now Patent No. 3,538,969. Divided and this application July 6, 1970, Ser. No. 52,563
Int. Cl. A23n *15/02*
U.S. Cl. 146—81 5 Claims



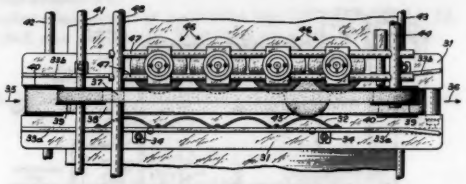
By engagement of pad means with the upper side of a globular article, it is rolled along guideways in a compound rotation, which periodically moves a projection of the article through the slot of the guideways. Such compound rotation is effected by moving pad means above guideways in a direction generally lengthwise of the guideways. Such pad means are spaced parallel belts one of which travels faster than the other. Knife blades are rotated closely beneath the guideways to sever projections of articles extending through the slot of the guideways.

3,669,165

PRE-SLICED MUFFIN AND PRE-SLICING APPARATUS

Hubert E. Tobey, Maywood; Alphonse M. Masluk, Cresskill; John W. Hood, Rivervale, and Dee L. Irvin, Moonachie, all of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Apr. 24, 1970, Ser. No. 31,469
Int. Cl. B26d *3/08*
U.S. Cl. 146—98 5 Claims



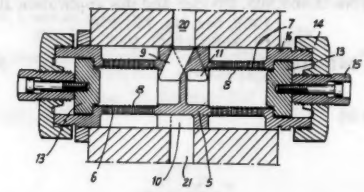
The invention describes a pre-sliced English muffin having a knife edge peripheral cut made from the edge of the muffin radially inward a predetermined amount. The cut is positioned so that the top and bottom portions are approximately equal. The cutting facilitates the forking and subsequent separation of the top portion from the bottom portion of the muffin. The pre-sliced muffin is produced by slicing apparatus comprising an undulating guide and a plurality of series arranged rotating cutter disks spaced so that the muffin can be fed by suitable conveyor means into the apparatus. A first blade of the series makes a partial peripheral cut with the rotating blade and stationary guide cooperating to impart rotation to the muffin. Each successive rotating blade makes a partial peripheral cut to produce a finished muffin having a complete peripheral cut to a predetermined amount.

3,669,166

FILTER CHANGING DEVICE

Roger Colin, Orthez, France, assignor to Societe Anonyme dite: Aquitaine-Organico, Courbevoie, France

Filed Dec. 4, 1970, Ser. No. 95,091
Claims priority, application France, Mar. 10, 1970, 7008543
Int. Cl. B29f *3/00*
U.S. Cl. 146—174 8 Claims



The device includes two coaxial filters in a cylindrical body positioned in the flow line perpendicular to the direction of discharge of a plastic extruder. By merely rotating the cylindrical body on its axis, one of the filters is connected with the extruder discharge while the other filter is disconnected from the extruder discharge and may be opened for cleaning by removing an end plug.

3,669,167

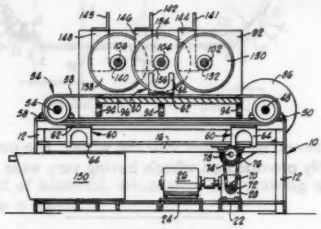
SAUSAGE SLICING APPARATUS

Floyd S. Gabel, 5008 N.W. Steanson, Oklahoma City, Okla.

Filed Aug. 5, 1970, Ser. No. 61,202
Int. Cl. B26d *1/28*
U.S. Cl. 146—98 4 Claims

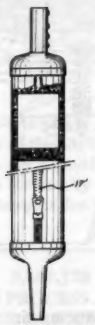
A sausage slicing apparatus which includes a conveyor for horizontally moving an elongated package of sausage in a horizontal direction while supporting the sausage in a cradle. A plurality of banks of rotary driven, disk-shaped cutter

blades which are horizontally offset or staggered to sequentially engage the sausage package are provided in a position to cut through portions of the sausage package in sequence, with minimum power required to effect complete cutting of the entire sausage package into patties or sausage disks.



Stripper fingers are provided and extend between adjacent disk-shaped cutter blades of the apparatus for preventing the adherence to the blades of fatty materials from the sausage, and consequent plugging of the blades and an increase in power requirements of the apparatus.

3,669,168
CONTAINER
Dale A. Beaudin, 1503 Hackett Street, Beloit, Wis.
Filed July 2, 1970, Ser. No. 52,010
Int. Cl. B65d *100*
U.S. Cl. 150—0.5 **3 Claims**



A container for canned or bottled beverages in the form of a golf umbrella comprising a semi-circular elongate support member having a handle portion and a bottom portion attached thereto; a flexible circular elongate outer mantle is provided to form a circular cylindrical portion between the handle and bottom portion. An upper mechanism runs the full axial length of the outer mantle and provides access to the interior of the cylinder.

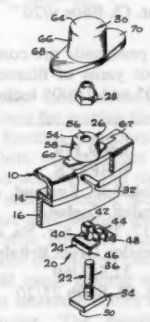
3,669,169
LADIES HANDBAG
Milton Lubliner, Jericho, N.Y., assignor to Morris White Fashions, Inc., New York, N.Y.
Filed Sept. 16, 1970, Ser. No. 72,591
Int. Cl. A45c *13/26*
U.S. Cl. 150—33 **8 Claims**

A ladies handbag having a side wall to which a pair of connector members is secured in longitudinally spaced alignment, each connector member having a pair of spaced parallel connector means extending parallel to the longitudinal axis of the handbag and defining an upper and lower pivot seat. A handle having a connector element at each end, is pivotally connected to the upper pivot seat and an ornamental member having a connector element at its upper end is pivotally connected to the lower pivot seat.

3,669,170
U-SHAPED CLIP NUT
Donald R. Schuster, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 22, 1970, Ser. No. 48,058
Int. Cl. F16b *37/04*
U.S. Cl. 151—41.75 **9 Claims**

A U-shaped clip nut in which the base leg and nut leg are joined by a bight portion extending only across an intermediate part of the total width of the clip nut with clamping fingers being formed of the remaining width and being cantilevered at the free end of the nut leg and directed toward the base leg.

3,669,171
FASTENER ASSEMBLY
Morris Yavitch, 1008 Benedict Canyon Drive, Beverly Hills, Calif.
Filed June 8, 1970, Ser. No. 44,137
Int. Cl. A47g *3/00;* **F16b** *39/02*
U.S. Cl. 151—44 **5 Claims**



Apparatus for use with a bolt and nut to hold down a water closet to a flanged member with a slot therein, which is

economical to produce and install. The fastener assembly includes a sheet metal member with a center portion bent into a U-shape for reception in said slot to resist turning, a hole in the center for receiving the shank of the bolt so it can project through the slot and through the water closet, and turned-over ends for engaging the bolt head to prevent it from turning. The assembly also includes a cap with an upper washer-like portion through which the bolt shank can project and flared side walls whose lower end can rest on the water closet, and a cover with tapered inner walls for snugly engaging the side walls of the cap.

3,669,172

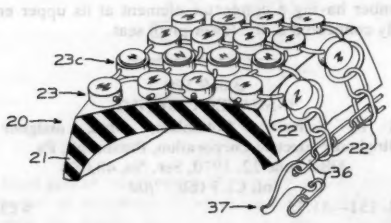
PROTECTIVE CHAIN ASSEMBLY FOR TIRES

Robert N. Stedman, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed July 24, 1970, Ser. No. 58,063

Int. Cl. B60c *27/20*

U.S. Cl. 152—171 **24 Claims**



A pneumatic tire or the like has a protective chain assembly wrapped therearound. The chain assembly comprises a plurality of rings coupled together by notched and coplanar cylindrical coupling means which also serve as tread sections on the periphery of the tire. Each coupling member attaches two of the rings together to form a tire chain assembly exhibiting multi-directional flexibility. In addition, the integrated chain assembly is reversible and the dimensions thereof may be selectively varied to provide various earthworking functions, such as compacting. In the preferred embodiment, one group of such coupling members forms master coupling members or joints for assembly and disassembly purposes.

3,669,173

PNEUMATIC TIRES

Maurice A. Young, Whittington, Lichfield, England, assignor to Dunlop Holdings Limited, London, England

Filed Sept. 15, 1969, Ser. No. 858,159

Claims priority, application Great Britain, Sept. 26, 1968, 45,650/68

Int. Cl. B60c *9/20*

U.S. Cl. 152—361 **7 Claims**

A breaker layer for a pneumatic tire comprising rubber-impregnated glass cords or yarns of filaments each having a diameter between 0.0005 and 0.0008 inches.

3,669,174

WHEELS

Iain C. Mills, Sutton Coldfield, England, assignor to Dunlop Holdings Limited, London, England

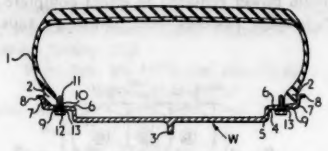
Filed June 17, 1970, Ser. No. 47,083

Claims priority, application Great Britain, June 27, 1969, 32,551/69

Int. Cl. B60b *25/20*

U.S. Cl. 152—375 **8 Claims**

A wheel for a pneumatic tire, particularly for use on racing cars, provided with at least one localized projection axially inwards of the wheel rim for preventing axially inwards displacement of the tire bead from the wheel rim flange and into the wheel well. In one form of wheel, the projections are



studs screwed or rivetted into the wheel. The projections are preferably provided on wheels having very wide bead seating portions.

3,669,175

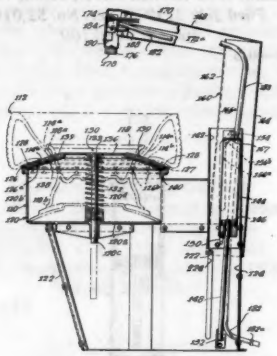
BEAD EXPANDER

Billy L. Sorenson, and Ray A. Scott, both of Fort Dodge, Iowa, assignors to The Coats Company, Inc.

Continuation-in-part of application Ser. No. 753,555, Aug. 19, 1968, now abandoned. This application Sept. 29, 1969, Ser. No. 861,564

Int. Cl. A60c *25/00*

U.S. Cl. 157—1.1 **6 Claims**



An apparatus for expanding tire beads into seating relationship with a vehicle rim characterized by a rim sealing surface on the member and a generally cylindrical tire side wall sealing surface around the rim supporting surface and fixed to the base.

3,669,176

DRIVE SYSTEM FOR CONTINUOUS CASTING PLANTS

Heribert Krall, Wurzburg; Helmut Maag, Hochberg; Otto Herrmann, Wurzburg, and Rudolf Posl, Nurnberg, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Sept. 18, 1969, Ser. No. 858,982

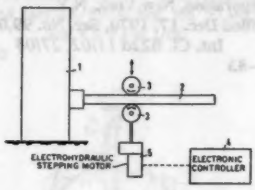
Claims priority, application Germany, Sept. 21, 1968, P 17 83 032.9

Int. Cl. B22d *11/00, 27/08*

U.S. Cl. 164—4 **6 Claims**

A drive system for drawing a strand-shaped casting out of the mold of a continuous casting plant comprises drive rollers engageable with the strand and mechanically driven by an electrohydraulic stepping motor which is controlled by electrical pulses from a programmable monitor so that the casting is drawn in accordance with a predetermined operating sequence, preferably such that after a given drawing travel

the drive rollers remain at rest or are reversely driven in accordance with the cooling and contraction of the previously drawn strand of material, whereafter the drawing and contraction cycle is repeated.

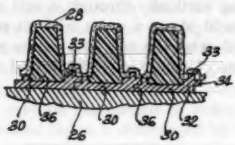


3,669,177

SHELL MANUFACTURING METHOD FOR PRECISION CASTING

John E. Ingalls, Pentwater, Mich., and Charles Yaker, Summit, N.J., assignors to Howmet Corporation, New York, N.Y.

Filed Sept. 8, 1969, Ser. No. 855,941
Int. Cl. B22c *9/00*
U.S. Cl. 164—26 **16 Claims**



The preparation of a composite shell mold for precision casting wherein portions of the shell mold of large dimension and complicated shapes are formed by the lost wax process while other portions are formed by conventional molding or permanent molding techniques for joinder into a composite mold.

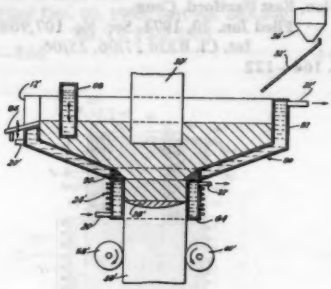
3,669,178

DIRECT REDUCTION PROCESS AND SIMULTANEOUS CONTINUOUS CASTING OF METALLIC MATERIALS IN A CRUCIBLE TO FORM RODS

Roger Pierre Theisen, Luxembourg City, Luxembourg, assignor to Continental Ore Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 736,113, June 11, 1968, now abandoned. This application June 9, 1969, Ser. No. 840,894
Int. Cl. B22d *22/02, 11/10*
U.S. Cl. 164—50 **1 Claim**

A continuous casting technique of ferro-alloys is provided wherein a water-cooled copper crucible having a relatively enlarged upper portion and a reduced lower portion defining a relatively small reaction zone. One or more electrodes are introduced either of a consumable or non-consumable variety. In either of these approaches, metal oxide, reducing agent, flux and addition materials are dispensed in the crucible and the desired reaction is initiated between the lower end of the electrode and a conveniently located negative pole. Relatively high temperatures are attained and upon melting of the slag, the alloying reaction takes place in continuous fashion. This reaction is enhanced by induction stirring which ensures the uniform dispersion of the several ingredients introduced into the reaction zone. As the molten alloy is formed, it is separated and gradually lowered at a controlled rate. Provisions are made for cooling the alloy as it is produced and lowered from the crucible. The discharged alloy is in rod shape and is thereafter cut into predetermined lengths or placed in any other form for the selected application.

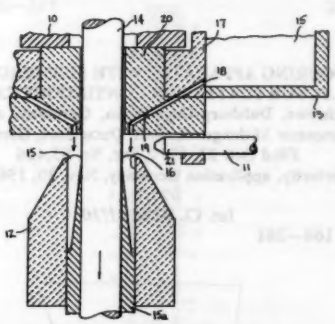


3,669,179

PROCESS OF BONDING MOLTEN METAL TO PREFORM WITHOUT INTERFACIAL ALLOY FORMATION

Alfred P. Federman, 9744 Sherman Road, Chesterland, Ohio

Filed Mar. 5, 1969, Ser. No. 804,641
Int. Cl. B22d *11/04, 19/00, 25/06*
U.S. Cl. 164—66 **4 Claims**



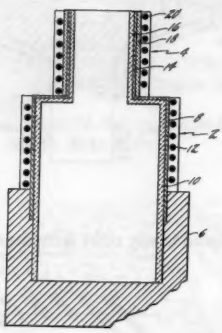
A unitary composite metal article formed of two dissimilar metals and the process for making the same by heating a substrate metal to a bonding temperature which is below the melting point of both the substrate and the casting metal; bringing the heated substrate and the molten casting metal into contact in an article-forming mold in the absence of an oxidizing atmosphere until wetting and molecular adhesion at the interface has been attained; and establishing a rate of heat transfer between the molten casting metal and the solid substrate which will cause chilling and solidification of the casting metal at the interface before formation of an interfacial alloy can occur. The resulting composite article represents a molecular bond of the casting metal to the substrate at the interface and is free from any visible interfacial alloy stratum.

3,669,180

PRODUCTION OF FINE GRAINED INGOTS FOR THE ADVANCED SUPERALLOYS

Joseph B. Moore, Jupiter Tequesta, and Roy L. Athey, North Palm Beach, both of Fla., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Jan. 20, 1971, Ser. No. 107,908
Int. Cl. B22d *27/06, 25/06*
U.S. Cl. 164—122 1 Claim



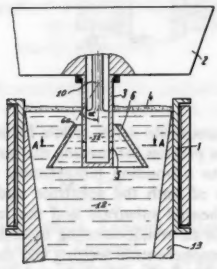
The highly alloyed superalloys are cast as a well stirred two-phase liquid/solid mixture into a heated mold and solidified with the maintenance of a well stirred two-phase layer preceding the axially advancing solidification front to provide a homogeneous ultra-fine-grain ingot.

3,669,181

POURING APPARATUS WITH SUBMERGED DEFLECTOR PLATES FOR CONTINUOUS CASTING

Hans Schrewe, Duisburg-Ungelsheim, Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Oct. 23, 1970, Ser. No. 83,426
Claims priority, application Germany, Nov. 20, 1969, P 19 59 097.7
Int. Cl. B22d *11/10*
U.S. Cl. 164—281 3 Claims



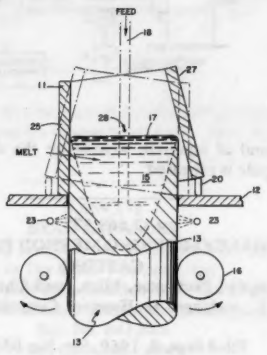
Particularly oriented deflector plates are disposed in front of submerged ports for charging a mold during continuous casting of steel.

3,669,182

METHOD AND APPARATUS FOR CONTINUOUS CASTING WITH GYRATING MOLD

Chih-Chung Wang, Lexington, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.

Filed Dec. 17, 1970, Ser. No. 99,076
Int. Cl. B22d *11/02, 27/08*
U.S. Cl. 164—83 9 Claims



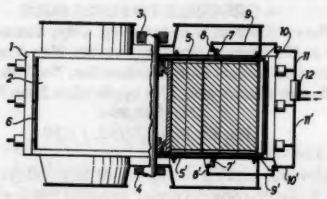
A method and apparatus for continuous casting of an ingot from a molten metal employing a mold having a conical opening passing vertically through it and a mechanism for gyrating the mold about a point without rotating the mold about a vertical axis. The rate of gyration of the mold is related to the rate of continuous withdrawal of the ingot from the mold.

3,669,183

ROTARY REGENERATIVE HEAT EXCHANGERS

Karl Heinz Mock, Neckargemuend, Germany, assignor to Svenska Rotor Maskiner Aktiebolag, Nacka, Sweden

Filed Aug. 26, 1970, Ser. No. 66,954
Claims priority, application Germany, Sept. 9, 1969, P 19 45 485.4
Int. Cl. F28d *19/00*
U.S. Cl. 165—9 11 Claims



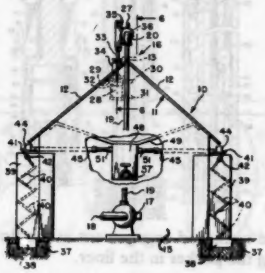
A rotary regenerative air preheater is provided a linkage for adjusting the positions of movable and spring-biased sealing plates or strips relatively to the matrix. In this linkage is included a hydraulic servo motor governed by impulses from means sensing changes of the length of the linkage caused by a foreign body or the like passing between a sealing element and the matrix and forcing the sealing element away from the matrix. At such occasions the servo motor is actuated to move the sealing element further away from the matrix to allow the passage of the foreign body whereby damage is avoided.

3,669,184

APPARATUS FOR HEATING AND COOLING A BUILDING

John K. Franzreb, Route 2, P. O. Box 252, Kingston, Tenn.

Filed July 22, 1970, Ser. No. 57,083
Int. Cl. F24f 3/00
U.S. Cl. 165—50 10 Claims



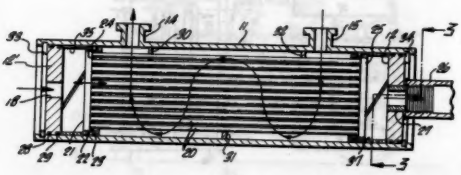
An apparatus for productively utilizing the heat from waste liquids discarded by industrial plants, such as power plants, for heating and cooling buildings, such as, greenhouses, and to prevent thermal pollution of bodies of water, such as rivers and lakes, into which the waste liquid is ultimately discharged at a low temperature. For heating a building, the heated liquid is discharged directly onto the building roof at the ridge thereof to flow down the sloping roof sides and is then deflected against the side walls of the building for heating the roof and said walls. The liquid is then collected in troughs for recycling through the industrial plant and back to the apparatus, or may be discharged to waste. For cooling the building the heated liquid is discharged by the apparatus upwardly from above the roof to effect evaporative cooling of the droplets. The cool liquid falling on the roof flows down its sloping sides for cooling the building, and is thereafter cascaded over louvers for recooling the liquid, heated by contact with the roof, before the liquid is discharged into the trough from which it can be recycled or carried off to waste.

3,669,185

MODULAR HEAT EXCHANGER CONSTRUCTION

Howard J. Bare, 1721 South Bluff Road, Los Angeles, Calif.

Filed Aug. 10, 1970, Ser. No. 62,247
Int. Cl. F28f 9/14
U.S. Cl. 165—158 4 Claims



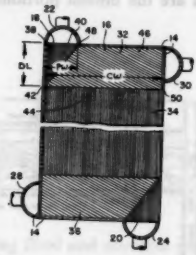
A heat exchanger construction is disclosed herein that is assembled from selected prefabricated components which include an outer shell for housing a tube assembly having a plurality of tubes carried as a unit by tube sheets and having snap-lock retainers releasably secured to the shell for holding the tube unit circulating fixed position within the shell. Means are provided for circuhating one fluid through the tube and for circulating another fluid around the tube within the shell for effecting an exchange of heat therebetween.

3,669,186

DISTRIBUTOR FOR PLATE TYPE HEAT EXCHANGERS HAVING END HEADERS

James J. Schauls, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Dec. 10, 1969, Ser. No. 883,840
Int. Cl. F28f 3/00
U.S. Cl. 165—166 4 Claims



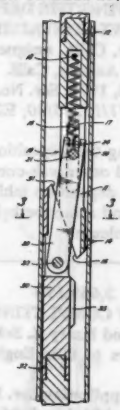
A plate type heat exchanger having a corrugated fin fluid distributor particularly adapted for use with end headers is shown. The distributor length is a function of the passage width, port width, and characteristics of the distributor fin material by which substantially uniform heat exchange fluid distribution across the width of a plate type heat exchanger passage is obtained.

3,669,187

BLOW-UP PREVENTER

Granison T. Alexander, Jr., Houma, La., assignor to Gem Oil Tool Company, Houma, La.

Continuation-in-part of application Ser. No. 31,965, Apr. 27, 1970, now Patent No. 3,602,306. This application Nov. 25, 1970, Ser. No. 92,595
Int. Cl. E21b 23/00
U.S. Cl. 166—217 2 Claims



An apparatus for arresting upward motion of a wireline tool blown up a production pipe by sudden excessive down hole pressure or fluid flow. The apparatus of the invention includes a wedging member having an oblique lower face, a connector member having a generally mating oblique upper face, and means for suspending a wireline tool therefrom. It also includes means for supporting the wedging member within the annulus of the well pipe and means for slidably coupling the wedging member and the connector member, whereby relative convergent motion between the two members moves the members into a braking or wedging attitude. The apparatus also includes means for imparting relative convergent motion to the wedging and connector members when the apparatus is in an unloaded state.

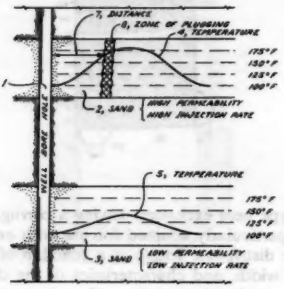
3,669,188

HEAT-GUIDED HYDROXIDE PLUGGING

Roy D. Coles, and Edwin A. Richardson, both of Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

Filed July 29, 1970, Ser. No. 59,235
Int. Cl. E21b *33/138, 43/24*
U.S. Cl. 166—270 9 Claims

Selected portions of a near well region of permeable earth formations are plugged by adjusting the temperature so that the selected portions are the hottest portions within the region, permeating the region with heat-responsive plug-forming liquid and, after plugging has occurred in the hotter portions, displacing unreacted plug-forming liquid from the cooler portions.



3,669,189

METHOD FOR INHIBITING THE DEPOSITION OF WAX FROM A WAX-CONTAINING OIL

Paul W. Fischer, Whittier, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Oct. 28, 1970, Ser. No. 84,916
Int. Cl. C23f *11/12, 15/00;* E21b *43/25*
U.S. Cl. 166—279 18 Claims

A method for inhibiting the deposition of wax from wax-containing petroleum and other wax-containing oils in which a small amount of a wax deposition inhibitor comprised of a copolymer of ethylene and a monoethylenically unsaturated ester is added to the petroleum.

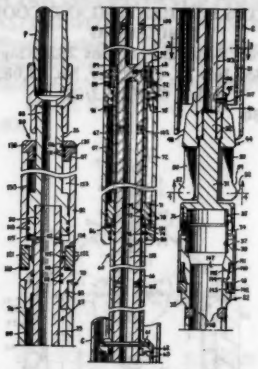
3,669,190

METHODS OF COMPLETING A WELL

Phillip S. Sizer, Dallas, and Harry E. Schwegman, Carrollton, both of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Continuation-in-part of application Ser. No. 803,507, Dec. 24, 1968, now abandoned, which is a division of application Ser. No. 605,870, Dec. 29, 1966, now Patent No. 3,498,376. This application Dec. 21, 1970, Ser. No. 99,889
Int. Cl. E21b *43/00, 43/10*
U.S. Cl. 166—315 27 Claims

A method of completing a well by installing in the well a flow conductor, performing various operations such as cementing the flow conductor in the well bore, drilling out excess cement from the flow conductor, perforating the casing at desired locations, and the like, installing a liner in the flow conductor of smaller internal diameter than the internal diameter of the flow conductor to provide an internal seal surface and oppositely facing stop shoulders in the flow conductor, setting a packer in the liner, and then installing an inner production flow conductor in the well and securing it to the packer. A setting tool for simultaneously locating a liner and a packer in a flow conductor, expanding the liner into sealing and anchored engagement in the flow conductor and then setting the packer in the liner.



3,669,191

METHOD OF FIGHTING A FIRE

William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.

Filed Feb. 12, 1971, Ser. No. 115,041
Int. Cl. A62c *3/00*
U.S. Cl. 169—1 A 17 Claims

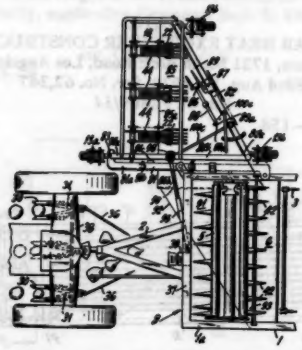
A method of fighting a fire comprising the steps of discharging an ablative fluid towards the fire from an elevated position relative to the floor of the structure to be protected, and manually applying an ablative fluid to the fire.

3,669,192

APPARATUS FOR HARVESTING CEREAL GRAINS, LEAFY VEGETABLES OR HOED VEGETABLES

Ernst Weichel, Bohnhofstrasse 1, Heiningen, Kreis Goppingen, Germany

Original application June 23, 1966, Ser. No. 560,972, now Patent No. 3,521,439, dated July 21, 1970. Divided and this application Feb. 16, 1970, Ser. No. 11,378
Int. Cl. A01d *27/00*
U.S. Cl. 171—40 19 Claims



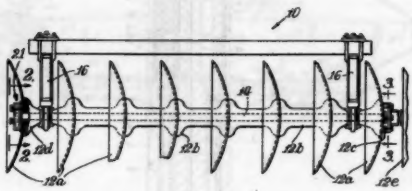
A unit for harvesting hoed, leafy and stalk crops includes a frame and a draw bar extending from the frame for towing of the unit along a path laterally adjacent and parallel to the travel of a tractor, with the harvesting unit extending rearwardly and laterally of the tractor. A crop carrier may be drawn by the tractor and the harvesting unit may be drawn by the crop carrier. The harvesting unit includes a guide scoop and associated power driven means for moving harvested material along the guide scoop and into the crop carrier. Various known harvesting devices may be interchangeably mounted to extend along the forward edge of the scoop and substantially perpendicular to the path of travel.

3,669,193

GANG BOLT LOCKING ARRANGEMENT

Hugh Cooper, Rochelle; Dale S. Whitehouse, and George E. Womble, both of Kewanee, all of Ill., assignors to Kewanee Machinery & Conveyor Co., Kewanee, Ill.

Filed Dec. 9, 1970, Ser. No. 96,549
Int. Cl. A01b *21/08, 23/06*
U.S. Cl. 172—570 8 Claims



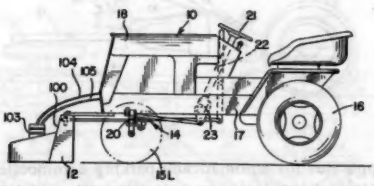
Clamping means for a piece of farm machinery, more specifically a disc harrow. The clamping means assures the proper tightening and positioning of one or more discs which are concavo-convex in shape upon a shaft. The clamping means includes a reaction member such as an anchor nut for the threaded end of the gang bolt or tie-rod which reaction member or anchor nut has a series of threaded holes through it and carries tightening screws or bolts and a clamping plate which has a central opening embracing the shaft but not connected to the shaft said plate being spring-like in character and engageable by the tightening screws whereby the plate is adapted to be forced by its outer surface, or at least the margin thereof against the surface of the disc which is adjacent to it whereby the gang bolt is placed under proper tension and the disc, or discs, and spacers between discs are adequately pressed together under spring tension.

3,669,194

SIDE SHIFTING IMPLEMENT APPARATUS

James W. Zurek, Lombard, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Jan. 22, 1970, Ser. No. 5,067
Int. Cl. A01b *69/08*
U.S. Cl. 172—280 8 Claims



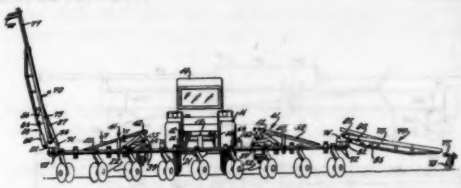
A mechanism for mounting and selectively positioning a front mounted implement, such as a mower, on a vehicle, the mechanism having means for manually selecting a lateral disposition of the implement relative to the longitudinal axis of the carrier and also operative for automatically producing lateral displacements of the implement from the selected position in response to corresponding actuations of the carrier's steering apparatus wherein such actuations are determinative of the turning radius of the vehicle.

3,669,195

FOLDING IMPLEMENT CARRIER

Edgar E. Green, and Phillip H. Nuckols, both of Blytheville, Ark., assignors to Paul Abbott Company, Inc., Blytheville, Ark.

Filed Apr. 3, 1970, Ser. No. 25,484
Int. Cl. A01b *65/02*
U.S. Cl. 172—311 3 Claims



Apparatus having fixed and movable portions for supporting a plurality of earth-working implements with such apparatus extending substantially beyond the sides of a propelling vehicle when in use and folded to inoperative position when not in use as well as while travelling and maneuvering. The movable portions of the apparatus are pivotally supported a substantial distance from the ends of the fixed portion and the fixed and movable portions are generally coextensive in operative position.

3,669,196

UNIVERSAL DRILLING RIG

Lyle W. Hokanson, Kirkland Lake, Ontario; James R. Savage, Swastika, Ontario; E. Peter Smith, Kirkland Lake, Ontario; Gilbert Levangie, and William Klass, both of Swastika, Ontario, all of Canada, assignors to Heath & Sherwood Drilling Limited, Kirkland Lake, Ontario, Canada

Filed Jan. 6, 1971, Ser. No. 104,384
Int. Cl. E21b *15/00*
U.S. Cl. 173—44 10 Claims

A drilling apparatus for exploratory oil and gas drilling is provided, such apparatus having a derrick comprising a plurality of component parts for assembly on site. Components of the derrick are hingedly connected for ease and convenience of erection. Hydraulic means are provided for the various operative functions of the apparatus. The primary motive power is supplied from an internal combustion engine source which may be augmented as desired to enable the apparatus to be employed throughout a wide range of drilling operations.

3,669,197

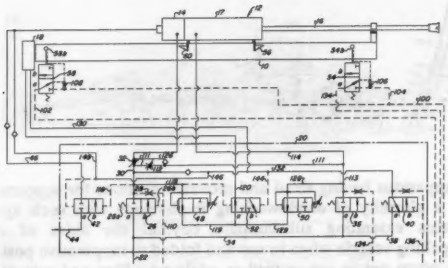
CONTROL SYSTEM FOR ROCK DRILLS

Laurence B. Hanson, Pine, and Wallace W. Arthur, Denver, both of Colo., assignors to Gardner-Denver Company, Quincy, Ill.

Original application Mar. 20, 1969, Ser. No. 808,925, now Patent No. 3,561,542. Divided and this application Sept. 11, 1970, Ser. No. 71,404

Int. Cl. E21c 5/16, 7/10

U.S. Cl. 173—19 5 Claims



An automatic control system for a guide shell mounted rock drill including a control circuit having pneumatically operated valves for providing pressure fluid to the drill hammer, rotation motor and feed motor and for controlling drill hole flushing medium. Sensors mounted on the drill guide shell provide for reversal of the feed motor and reduced drill power upon reaching the forward end of the guide shell, and shutdown of the drill upon reaching the rearward end of the guide shell. The control circuit includes a series of control valves for selection, at will, by the drill operator of a particular operating sequence or condition of the drill. A control valve is included for providing an operating sequence which includes operation of the drill at reduced power for a predetermined period of time for collaring a drill hole. The control system also includes pressure proportioning valves for automatically regulating the feed motor pressure to be proportional to the drill percussion motor supply pressure.

3,669,198

FLUID OPERATED DROP HAMMER WITH VALVED PISTON

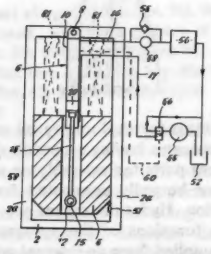
Roger M. Elliott, Somersham, near Ipswich, England, assignor to The British Steel Piling Company Limited, Claydon, Ipswich, Suffolk, England

Filed Mar. 10, 1970, Ser. No. 18,239

Claims priority, application Great Britain, Mar. 11, 1969, 12,814/69

Int. Cl. E02d 7/10; F01l 21/04

U.S. Cl. 173—127 10 Claims



A drop hammer has an operating ram in which valve-controlled conduit means interconnect opposite ends of a cylinder of the ram to allow fluid to transfer between the ends of the cylinder.

3,669,199

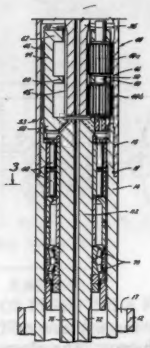
DRILLING APPARATUS

Roy H. Cullen; Jimmie R. Aker, and William E. Burke, all of Houston, Tex., assignors to Youngstown Sheet and Tube Company, Youngstown, Ohio

Filed Mar. 19, 1970, Ser. No. 21,120

Int. Cl. E21b 3/08

U.S. Cl. 175—106 3 Claims



This invention relates to drilling apparatus having a flexible drill string, a motor supported by the drill string, two-stage planetary gear-reduction means driven by the motor, and a drill bit driven by the gear-reduction means. In the gear-reduction means the second stage sun, planet and ring gears have increased longitudinal dimension for carrying the increased torque loading, and the second stage planet gears are split into sections and supported at each end of each section to prevent excessive outward deflection of their bearing shafts.

3,669,200

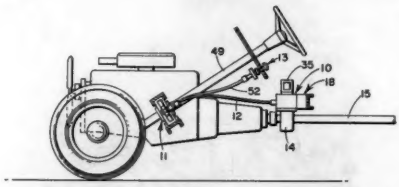
AUTOMATIC PARKING DEVICE

Paul J. Odell, 116 Starkdale Road, Steubenville, Ohio

Filed Oct. 23, 1969, Ser. No. 868,751

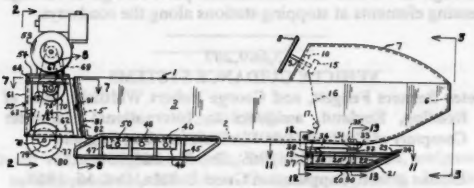
Int. Cl. B62d 5/00

U.S. Cl. 180—1 AS 9 Claims



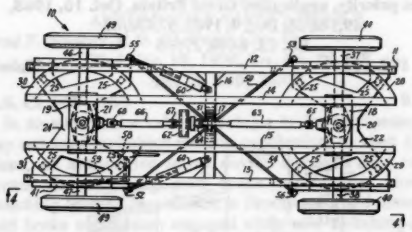
An apparatus for automatically parking automobiles having a steering means including a steering post and a transmission with a reverse gear. The device includes first gear means on the steering post, second axially and transversely displaceable gear means and third gear means operatively connected to be driven by the transmission drive shaft in reverse gear. The second gear means is selectively operatively positioned between the first and second gear means to transmit the rotation of the drive shaft to the steering post to effect turning of the steering wheels. Timing means control the direction of rotation of the third gear means so that the steering wheels of the vehicle are rotated in a first direction and, after a predetermined period of time, rotated in the reverse direction in order to accomplish the desired parallel parking.

3,669,201
MOTOR DRIVEN ICE VEHICLE
Frederick A. Taylor, 32548 Riverpoint, New Baltimore, Mich.
Filed May 19, 1970, Ser. No. 38,791
Int. Cl. B62m 27/02
U.S. Cl. 180—6 R 2 Claims



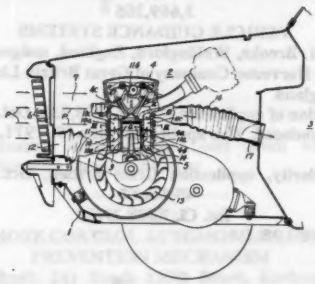
A vehicle body, such as that of a boat, with laterally spaced rearwardly mounted runners, and first pivot means mounting said runners for limited travel about the axis of said pivot, and substantially transverse to the direction of travel, a forward mounted ski or runner with second pivot means mounting said ski or runner, for arcuate travel about the axis of said second pivot means to steer the vehicle: a bracket assembly secured to the rear of the vehicle by and including laterally spaced parallel, opposed channels, a propulsion unit, having a motor and drive wheel mounted upon a frame, said frame carrying spaced, parallel slide members to be received in said channel members to resist lateral or forward and rearward movement of the mounting assembly, but to afford up and down sliding travel in said channels to accomodate the propulsion unit to irregularities in the surface over which the vehicle is driven, with means attached to said frame engageable with further means secured to the rear portion of the boat to establish a limit for the downward travel of said unit.

3,669,202
FOUR WHEEL DRIVE VEHICLE
Adolph Leslie Andersen, Monroe, Wash.
Filed Oct. 7, 1970, Ser. No. 78,851
Int. Cl. B62d 5/06; B60k 17/34
U.S. Cl. 180—50 1 Claim



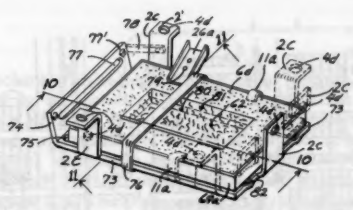
A four wheel drive vehicle in which both the front and rear wheels are driven and steered. The front and rear axle housings extend rigidly from a differential and the axles are pivoted about a central vertical pivot in an equal but opposite direction so that the rear wheels completely track the front wheels.

3,669,203
AIR-COOLING APPARATUS FOR AUTOMOTIVE ENGINE
Soichiro Honda, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki, Kaisha, Tokyo, Japan
Filed July 31, 1969, Ser. No. 846,476
Claims priority, application Japan, Aug. 8, 1968, 43/55808; Aug. 30, 1968, 43/61735
Int. Cl. B60h 1/16
U.S. Cl. 180—54 A 8 Claims



A vehicle is provided which has an engine space having an opening arrangement for the admission of air when the vehicle is in motion. Air moves into the engine space along a determinable passage. An engine is arranged in the engine space in intercepting relationship with the passage to be cooled by air flowing therethrough. The engine includes a double wall exterior forming an air jacket into which air is forced under pressure by a blower in order to provide a second source of cooling for the engine. The double wall exterior includes inner and outer walls connected by heat transmitting plates and provided with cooling fins. The air jacket is connected to a passenger space into which heated air is admitted by a shut-off valve. The engine may have cylinders arranged either longitudinally or laterally of the vehicle and the forced air cooling may be provided in such a manner as to be in opposite direction to the natural cooling through the aforesaid space.

3,669,204
SURFACE, MATERIAL AND HEALTH PROTECTIVE COMBINATION DEVICE
Peter Andrews, 190 Gebhardt Road, Penfield, N.Y.
Original application June 17, 1963, Ser. No. 288,159, now abandoned. Divided and this application Feb. 21, 1966, Ser. No. 532,831
Int. Cl. B67d 25/20
U.S. Cl. 180—69.1 12 Claims



A fluid retaining receptacle device having at least one separate material retained therein for retaining fluid which drips therein generally from the motor or a fluid retaining housing portion of the motor vehicle which may be a car, truck, bus and a boat. The receptacle device may be disposed

under at least one portion of the motor vehicle, may be removably secured and supported in at least one portion of a structure which is removably secured and suspendingly disposed beneath at least one portion of the motor vehicle. Absorbent, porous, catalyst material and/or oil eating bacteria and the like is retained in the device for increasing the rate of oxidation and thickening of the retained fluid, whereby at least lives are saved and accidents are prevented on the highways; fluid pollution inside of a boat is prevented; further pollution of the air we breathe is prevented; millions of dollars are saved for the cities, State and Fed. Gov. combined and at least $35.00 is saved for motor vehicle owners.

3,669,205

VEHICLE GUIDANCE SYSTEMS

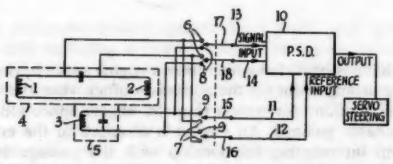
David W. I. Brooke, Wallingford, England, assignor to International Harvester Company of Great Britain Limited, London, England

Continuation of application Ser. No. 865,932, Oct. 13, 1969, now abandoned. This application May 19, 1971, Ser. No. 145,006

Claims priority, application Great Britain, Oct. 16, 1968, 49,141/68

Int. Cl. B60k *27/00*

U.S. Cl. 180—98 **10 Claims**



A magnetic sensing head arrangement for guiding a vehicle incorporates a pair of detectors so connected as to give a difference output as a result of a received electromagnetic signal, and a single detector positioned between them. By applying the difference signal from the two detectors and the output from the single detector alternately as the signal input and the reference input to a phase sensitive detector the vehicle may be guided to follow a path either directly over a guide wire or midway between two guide wires which carry the same current in opposite directions.

3,669,206

CONTAINER TRANSPORTING SYSTEM

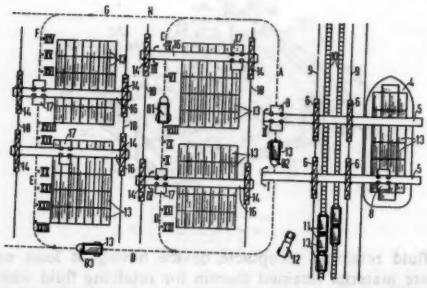
Hans Tax, and Rudiger Franke, both of Munich, Germany, assignors to said Tax, by said Franke

Filed Aug. 19, 1969, Ser. No. 851,248

Claims priority, application Germany, Aug. 21, 1968, P 17 98 090.4

Int. Cl. B62d *1/24*

U.S. Cl. 180—98 **28 Claims**



Containers transported on containerships and the like are transferred between storage and shipping areas by means of automatic vehicles which travel along guiding cables buried in the roadways connecting the several areas. The vehicles are steered and their drive systems controlled by means of steering and drive control signals generated at a central control station and transmitted by the guiding cables to sensing elements on the vehicles. A signal generator on each vehicle transmits continuous back signals to the control station through the cables and intermittent position signals through sensing elements at stopping stations along the roadways.

3,669,207

VEHICLE GUIDANCE SYSTEMS

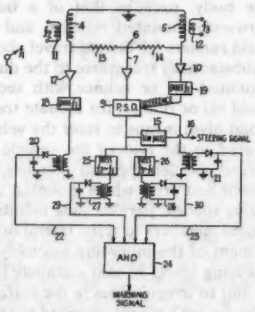
Peter Berners Fellgett, and George Robert Whitfield, both of Reading, England, assignors to International Harvester Company of Great Britain Limited, London, England

Filed Oct. 13, 1969, Ser. No. 865,930

Claims priority, application Great Britain, Oct. 16, 1968, 49,136/68

Int. Cl. B60k *27/06*

U.S. Cl. 180—98 **8 Claims**



A system for guiding a vehicle under control of a guide member enables the vehicle to be guided in a path which may be immediately above or offset from the guide member. The position of the vehicle in relation to the guide member is uniquely determined by receiving signals in two different ways having strengths of interaction which vary differently with distance from the guide member. The nature of the system enables a warning to be given immediately upon any malfunction in a part of the system.

3,669,208

VEHICLE GUIDANCE SYSTEMS

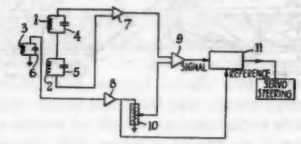
David William Ingham Brooke, Brightwell, England, assignor to International Harvester Company of Great Britain Limited, London, England

Filed Oct. 13, 1969, Ser. No. 865,931

Claims priority, application Great Britain, Oct. 16, 1968, 49,140/68; Dec. 4, 1968, 57,498/68

Int. Cl. B60k *27/06*

U.S. Cl. 180—98 **6 Claims**



A vehicle guidance system in which a vehicle may be guided to follow accurately any one of a number of paths laterally offset different predetermined distances from a single guide wire using a magnetic sensing head arrangement which does not have to operate from a null position above the guide wire. Preferably the vehicle is guided along a path

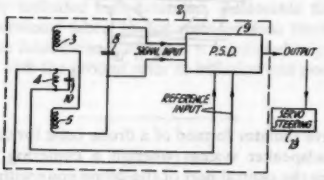
determined by a selected value of the ratio between the effective gradient and the vertical component of the electromagnetic field and the strength of the vertical component of the electromagnetic field at the vehicle, the selection of the desired path offset a predetermined distance from the guide member being made by the use of a variable electrical device such as a potentiometer.

3,669,209

VEHICLE GUIDANCE SYSTEMS

David William Ingham Brooke, Brightwell, England, assignor to International Harvester Company of Great Britain Limited, London, England

Filed Oct. 13, 1969, Ser. No. 865,933
Claims priority, application Great Britain, Oct. 16, 1968, 49,142/68; Dec. 4, 1968, 57,499/68
Int. Cl. B60k *27/06*
U.S. Cl. 180—98 **18 Claims**



A vehicle is guided at a desired angle in relation to, preferably parallel to, the lines of constant magnetic field strength resulting from a guide wire carrying an electric current by using two magnetic detectors which are positioned on the vehicle in a line having a substantial component in the direction of advance of the vehicle.

This method of guiding a vehicle has particular application in turning a vehicle at the end of a traverse along a line of constant gradient of magnetic field strength under the control of the guide wire.

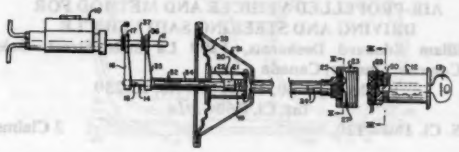
3,669,210

AUTOMOTIVE SAFETY DEVICE

Fred F. Haefner, R.D. #2, Evans City, Pa.

Filed Nov. 18, 1970, Ser. No. 90,718
Int. Cl. B60r *25/08*
U.S. Cl. 180—103 **8 Claims**

In an automotive vehicle having a brake mechanism and a key actuated switching-ignition mechanism to start a power plant, an automotive safety device having a first engaging means for engaging said brake mechanism when said switching-ignition mechanism is deactivated and maintaining said brake mechanism engaged while said switching-ignition mechanism is off, a releasing means for releasing said first engaging means and for maintaining said first engaging means disengaged while said switching-ignition mechanism is on, an actuating means for actuating said releasing means when said key actuates said switching-ignition mechanism and connected to said releasing means by electrical lead means, a vacuum chamber enclosing said electrical lead means and extending from adjacent said actuating means to adjacent said releasing means, and a second engaging means for engaging said brake mechanism when a given vacuum in said vacuum chamber is released and for maintaining said brake mechanism engaged until said given vacuum is restored within said vacuum chamber.

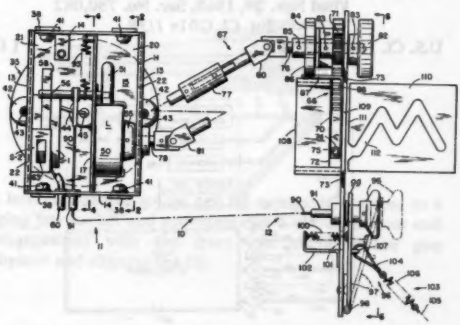


3,669,211

REMOTE CONTROL AUTOMOBILE THEFT PREVENTION MECHANISM

Herman Gilgoff, 241 Beach 137th Street, Rockaway Park, N.Y.

Filed Apr. 17, 1970, Ser. No. 29,530
Int. Cl. B60r *25/04*
U.S. Cl. 180—112 **5 Claims**



A mechanism including a tamper-proof housing which is mounted on the distributor of an automobile. The housing contains a normally open electrical switch, which is series-connected to a portion of the electrical conductor which connects the automobile spark coil to the distributor and which extends through the interior of the housing, and a combination lock which is operable to actuate the switch to closed position. The lock is operated remotely from the passenger side of the automobile instrument panel through the medium of cooperating devices including a rotatable linkage, a rack and pinion assembly and a manual actuator that is conveniently accessible to the seated operator. Alternatively, a "key" may be used in place of the manual actuator. The mechanism is automatically returned to "protective condi-

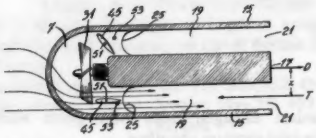
tion," i.e., with the switch in open position, by a pull cable which is operated manually or by the opening of a door of the automobile, as desired.

3,669,212

AIR-PROPELLED VEHICLE AND METHOD FOR DRIVING AND STEERING SAID VEHICLE

William Edouard Desbarats, 1289 La Salle Street, Baie Comeau, Quebec, Canada

Filed Apr. 30, 1970, Ser. No. 33,230
Int. Cl. B60v *1/14*
U.S. Cl. 180—120 **2 Claims**



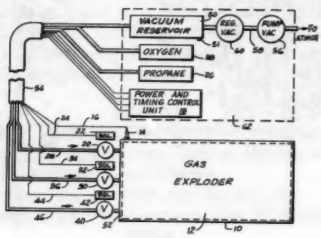
An air-propelled vehicle having an air tunnel on either side of the central longitudinal vertical plane of the vehicle and an air thrust source forwardly of the tunnels blowing a jet of air of predetermined magnitude into each of the tunnels. A baffle assembly diverts, for steering, a portion at least of one jet into the other jet whereby to modify the relative magnitudes of the jets.

3,669,213

SEISMIC GAS EXPLODER APPARATUS

John C. Mollere, San Marino, Calif., assignor to Western Geophysical Company of America

Filed Nov. 29, 1968, Ser. No. 780,082
Int. Cl. G01v *1/38*
U.S. Cl. 181—0.5 NC **1 Claim**



A gas exploder seismic wave source which includes a closed chamber for receiving a mixture of combustible gases. Means are provided to detonate the combustible mixture thereby producing gaseous detonation products. Vacuum-operated exhaust means are coupled to the chamber to exhaust the detonation products from the chamber.

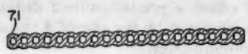
3,669,214

VIBRATING PLATE FOR SOUND INSTRUMENT

Hideo Matsuura; Katsuhiko Imagawa, and Murare Yoshiheko, all of Hamakita-shi, Shizuoka-ken, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Feb. 8, 1971, Ser. No. 113,344
Claims priority, application Japan, Feb. 13, 1970, 45/11987
Int. Cl. G10k *13/00;* **H04r** *7/00;* **G10c** *3/06*
U.S. Cl. 181—32 R **6 Claims**

A vibrating plate for a sound instrument, such as a diaphragm of a loudspeaker, a sounding board of a piano or guitar, which comprises a plate of light material, such as paper, plastics, foamed plastics, metal or the like, said plate having pipes or cells formed therein or fixed thereto, said



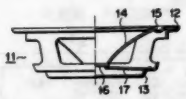
pipes or cells being filled with fluid under high pressure, thereby increasing flexural rigidity of said vibrating plate without appreciable increasing its weight.

3,669,215

PASSIVE RADIATOR FOR USE IN A BASS REFLEX LOUDSPEAKER SYSTEM

Takeo Kikuchi, and Hisaaki Hashino, both of Tokyo, Japan, assignors to Sansui Electric Co., Ltd., Tokyo, Japan

Filed Feb. 8, 1972, Ser. No. 113,492
Claims priority, application Japan, Feb. 12, 1970, 45/13507
Int. Cl. G10k *13/00;* **H04r** *7/00*
U.S. Cl. 181—32 R **7 Claims**



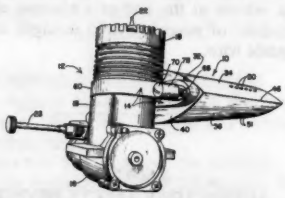
A passive radiator formed of a drone cone for use in a bass reflex loudspeaker system wherein a centering device for suspending the central part of the drone cone within a basket frame is made of elastic wire members.

3,669,216

MODEL AIRPLANE MUFFLER CONSTRUCTIONS

Donald H. Spies, 919 Amherst Lane, Wilmette, Ill.

Filed July 6, 1971, Ser. No. 159,979
Int. Cl. F01n *1/08, 1/14;* **F01n** *7/10*
U.S. Cl. 181—40 **14 Claims**



A lightweight sheet metal model airplane muffler in the form of a hollow shell having symmetrical airfoil characteristics and defining an internal expansion chamber for exhaust gases. Outlet ports are provided in the camber regions of the shell where they communicate with the vacuum pockets which are established by the slipstream during flight and the low pressure air in such pockets assists in evacuating the chamber.

3,669,217

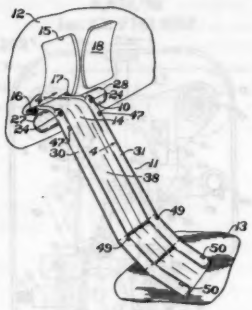
ESCAPE SLIDE POSITIONING TUBE

John M. Fisher, 622 Sackett Avenue, Cuyahoga Falls, Ohio

Filed Nov. 16, 1970, Ser. No. 89,828
Int. Cl. A62b *1/20*
U.S. Cl. 182—48 **8 Claims**

A positioning tube for an escape slide of the type used for aircraft having a long inflatable ramp which is inflated from

the folded condition to the extended position in which the location and attitude of the ramp is controlled by an inflatable tube attached to the underside of the ramp for engagement with the aircraft fuselage to which the ramp is attached for biasing the ramp outward from the fuselage. Manifolding is provided for rapid inflation of the positioning tube simultaneously with inflation of the ramp and before the ramp is completely unfolded and extended. Releasable fasteners of three-dimensional fabric having resilient hook fibers hold the ramp in the folded condition until it is inflated to prevent engagement with the ground prior to inflation and positioning.



3,669,218

PORTABLE STEPS FOR A VEHICLE OR THE LIKE

Joshua D. Hall, Mlesau Army Depot, Aezmmi-Su, APO New York, N.Y.

Filed May 19, 1971, Ser. No. 144,929

Int. Cl. E06c *5/02*

U.S. Cl. 182—97 **5 Claims**

A step assembly is hingedly connected at its upper end in depending relation to a horizontal platform by a support rod pivotally connected to the platform for swinging movement of the step assembly between an upright utility position and a retracted stored position.

3,669,219

MEANS FOR SUPPLYING A PLURALITY OF SPINNING RINGS WITH FLUID LUBRICANT

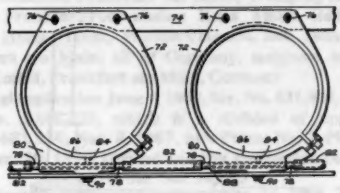
Andrew J. Wayson, Needham, and Richard T. De Stefano, Everett, both of Mass., assignors to Merriman, Inc., Hingham, Mass.

Filed Oct. 19, 1970, Ser. No. 81,822

Int. Cl. D01h *7/62*

U.S. Cl. 184—7 A **11 Claims**

Fluid lubricant supply means for a plurality of sintered metal spinning rings on a spinning frame in which each ring holder has a small pipe cast in position in the body of the holder with the ends of the pipe extending beyond the holder. The pipe ends of adjacent holders are connected by flexible tubular elements applied after the holders are in position on the ring rail. Some of the lubricant fed through the continuous conduit formed by the pipes and connecting tubular elements is diverted at each holder through a hole in the wall of the pipe and a related passage through the holder to the spinning ring of that holder.



3,669,220

EXCHANGEABLE GREASE GUN TIP

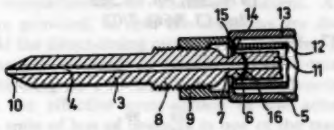
Karl Ivan Andersson, Noltarpsvagen 3D, Mariestad, Sweden

Filed Feb. 2, 1970, Ser. No. 7,702

Claims priority, application Germany, Mar. 12, 1969, G 69 09 955

Int. Cl. F16n *5/02, 21/02*

U.S. Cl. 184—105 C **6 Claims**



An interchangeable grease gun tip swingably engaged to a clamping jaw socket and provided with a nut on its rear end for engagement with the front end of a grease gun mouthpiece and aligning the tip.

3,669,221

BRAKE INSTALLATION ESPECIALLY FOR COMMERCIAL-TYPE VEHICLES

Helmut Hase, Sulzbach (Murgtal), Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany

Filed June 18, 1970, Ser. No. 47,364

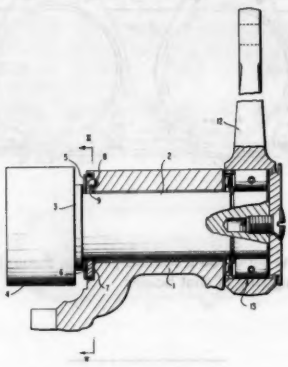
Claims priority, application Germany, June 25, 1969, P 19 32 084.4

Int. Cl. F16d *65/60, 51/50*

U.S. Cl. 188—79.5 K **21 Claims**

A brake installation especially for commercial-type vehicles, in which the brake shoes are actuated by a brake cam shaft, possibly with the assistance of compressed air, and in which an automatic readjusting mechanism is provided that includes a friction member arranged between the brake cam of the brake cam shaft and a control disk; the friction

member is effective in the axial direction of the brake cam shaft and is movable with respect to a relatively fixed part of



the brake in the circumferential direction within predetermined limits.

3,669,222

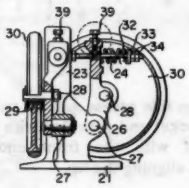
GUIDING AND DAMPENING DEVICE

Akira Takamura; Kazushi Kunii; Saburo Seharada, and Hiroshi Nakatani, all of c/o Inazawa Works of Mitsubishi Denki Kabushiki Kaisha, No. 1100, Inokuchi-cho, Inazawa, Aichi Prefecture, Japan

Original application Jan. 12, 1968, Ser. No. 697,525, now Patent No. 3,554,321. Divided and this application Aug. 31, 1970, Ser. No. 68,385

Int. Cl. B66b 7/02

U.S. Cl. 187—95 5 Claims



A device for guiding an elevator car along a guide rail comprises a plurality of rotatable rollers positioned in symmetrical relationship around a peripheral transverse portion of the guide rail. Each roller is biased into pressure contact with the guide rail by a dampening spring whereby impulsive or vibrational forces applied by the guide rail during movement of the elevator car are effectively absorbed by the dampening spring rather than being transmitted to the elevator car. Means are also employed for rapidly attenuating any vibrational or rocking movement of the elevator car caused by either operation of an elevator door opening-and-closing mechanism or translational movement of the elevator car along the guide rails.

ERRATUM

For Class 188—79.5 K see:
Patent No. 3,669,221

3,669,223

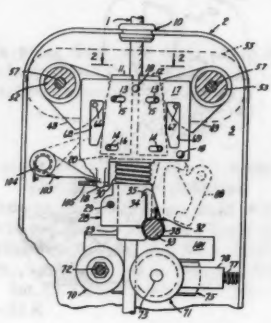
ROPE GRIPPING DEVICE

Carter H. Arnold, 317 Rocky Point Road, Palos Verdes Estates, Calif.

Filed Sept. 4, 1970, Ser. No. 69,711

Int. Cl. F16d 59/02; B66d 5/16

U.S. Cl. 188—188 9 Claims



A device for gripping a wire rope or the like wherein a pair of opposed jaws are urged longitudinally of the rope and camming means is provided for urging the jaws toward each other into gripping relation with the rope in response to such longitudinal movement. The particular combination of gripping jaws and camming surfaces achieves an optimum gripping effect. In the illustrative form of the invention the device on which the gripping means is used moves along the length of a fixed rope. Means is provided for actuating the gripping jaws when the relative speed between rope and device exceeds a predetermined amount regardless of whether the rope or the device is stationary.

3,669,224

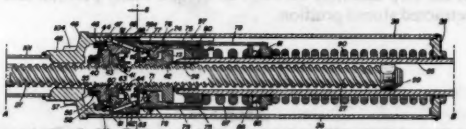
AUTOMATIC DOUBLE ACTING SLACK ADJUSTERS

Henry R. Billeter, Deerfield, Ill., assignor to Sloan Valve Company, Chicago, Ill.

Filed Dec. 21, 1970, Ser. No. 100,204

Int. Cl. F16d 65/66

U.S. Cl. 188—202 19 Claims



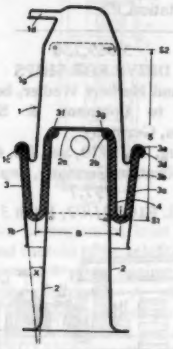
A slack adjuster of the double acting type for railway cars has three spin nuts arranged on a threaded rod. The spin nuts are variably operated to take up or let out slack in the brake rigging and have clutch surfaces cooperating with clutch surfaces adjacent the spin nuts to stop their rotation. The spin nuts are normally clutched to prevent unintended relative movements under operating conditions of vibration and shock. Economical standard tubular parts, and simple spin nuts are employed and arranged for ease of assembly and reliable operation.

3,669,225

VEHICLE SUSPENSION UNIT

Alexander Eric Moulton, and Harold Harman, both of Bradford-on-Avon, England, assignors to Moulton Developments Limited, Bradford-on-Avon, Wiltshire, England

Filed Jan. 22, 1971, Ser. No. 108,760
Claims priority, application Great Britain, Jan. 30, 1970, 4,624/70
Int. Cl. F16f 9/08
U.S. Cl. 188—298 4 Claims



The invention provides a diaphragm-type hydraulic displacer unit of the kind which includes a piston-like member arranged to move inwardly and outwardly of a cylinder-like member, the annular gap between the piston and cylinder being bridged by a flexible diaphragm and in which during operation the ration between the maximum stroke of which the unit is capable and the maximum effective bore of the diaphragm, occurring in operation, is at least 1.2 : 1, and may be 2 : 1 or more, and in which during all operative conditions the pressure across the unsupported diaphragm loops exceeds 100 pounds per square inch.

The invention is concerned with ensuring longevity of the diaphragm in such a unit and provides that the unit shall have the following features in combination:

a. the flared flanks of the piston and the inner wall of the cylinder skirt are tapered in opposite directions such that over the maximum stroke permitted in operation, the effective bore of the diaphragm increases as the piston moves inwardly of the cylinder and such that the dimension of the effective bore of the diaphragm, when the piston is in its innermost position is between 15 percent and 25 percent greater than the dimension of the effective bore of the diaphragm when the piston is in the outermost position of its permitted stroke;

b. the piston flanks and the inner wall of the skirt are so constructed that the ratio between the effective bore of the diaphragm and the loop radius of the diaphragm will always be greater than 11:1 throughout the permitted stroke, with the loop radius being maintained substantially constant within 10 percent throughout the permitted stroke;

c. that the diaphragm is initially moulded in the shape which it would be forced to adopt when the piston is advanced to a position further into the cylinder than would be occasioned during its normal operation in the permitted stroke;

d. the cord reinforcement of the diaphragm consists of at least two plies having a bias angle of between 30° and 50° inclusive;

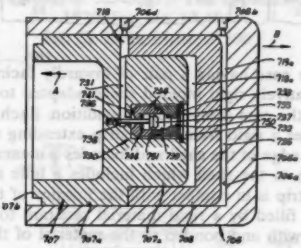
e. the thickness of the diaphragm is such that the ratio between the loop radius of the diaphragm and the thickness of the diaphragm is always greater than 2:1 throughout the permitted stroke.

3,669,226

PISTON ASSEMBLY FOR DUAL-NETWORK DISK-BRAKE SYSTEM

Helmut Marschall, Frankfurt am Main; Wolfgang Kammermayer, Frankfurt/Fechenheim; Hans Albert Beller, Bad Vilbel; Heinz Hahm, Walldorf/Hessen, and Juan Belart, Frankfurt am Main, all of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Germany

Original application June 9, 1969, Ser. No. 831,400, now Patent No. 3,601,233, which is a division of application Ser. No. 681,330, Nov. 8, 1967, now Patent No. 3,490,565, dated Jan. 20, 1970. Divided and this application Dec. 18, 1970, Ser. No. 99,407
Claims priority, application Germany, Nov. 16, 1966, T 32523; Dec. 16, 1966, T 32765; T 32766; T 32768; T 32769; Dec. 17, 1966, T 32784; T 32785; Dec. 7, 1967, T 33161
Int. Cl. B60t 11/28
U.S. Cl. 188—345 8 Claims



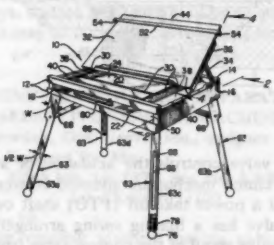
A vehicle-brake system having a tandem or twin master cylinder for delivering the brake fluid to independent transmission networks each connected with one compartment of a disk brake whose actuating cylinder is located on one side of the brake disk and receives at least one piston defining its working compartments or chambers therein. A pair of pistons are provided, so that the chambers are disposed to one side of the direct-acting piston while the other piston applies pressure to the brake housing or to a force-transmission frame extending around the disk. A double-acting valve maintains the effective cross-section of the actuating assembly in spite of loss of pressure in one of the transmission networks.

3,669,227

ARTIST'S CARRYING CASE AND EASEL

Glen M. Alford, 2885 Windfall Avenue, Altadena, Calif.

Filed Aug. 6, 1970, Ser. No. 61,770
Int. Cl. A47b 27/02
U.S. Cl. 190—11 10 Claims



Artist's carrying case characterized by a partitioned rectangular box having a top compartment closed by a lid which may be angularly elevated to form an easel and also provide access to the top compartment. A second partition forms a lower compartment which is accessible through a slot, closed by a slideably removable bar, which is then

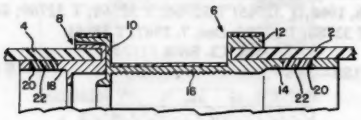
secured to the face of the easel. Foldable legs with nesting angle braces are disposed adjacent the second partition when the case is being transported.

3,669,228

LUGGAGE CONSTRUCTION

Henry L. Kotkins, Seattle, Wash., assignor to Skyway Luggage Company, Seattle, Wash.

Filed Apr. 30, 1970, Ser. No. 33,240
Int. Cl. A45c 3/00
U.S. Cl. 190—41 R 4 Claims



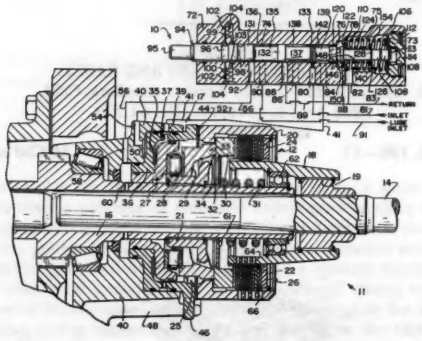
A luggage case having a pair of inwardly facing opposed concave relatively rigid molded shells adapted to abut each other when the case is in a closed condition. Each of the sections includes a rigid framework strip extending around the confronting edge of the shell and includes a means for securing the strip to the shell which includes a hole in the strip where the strip is in contact with the interior of the section. The hole is filled by a rigid material resistant to shear and compatible with and bonded to the material of the concave shell.

3,669,229

POWER TAKE-OFF CONTROL VALVE

Ronald J. Ronayne, and Edwin Ketterling, both of Charles City, Iowa, assignors to White Farm Equipment Company, Cleveland, Ohio

Filed Feb. 9, 1970, Ser. No. 9,489
Int. Cl. F16d 67/02
U.S. Cl. 192—12 C 4 Claims



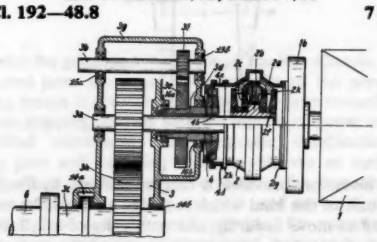
The control valve controls the actuation of an hydraulically actuated clutch mechanism situated between a power input shaft and a power take-off (PTO) shaft on a tractor. The control valve has a biasing spring arrangement which will move the valve spool of the control valve from a clutch-engaged position to a clutch-disengaged position when the pressure of the operating fluid delivered to the control valve falls below a predetermined value. Such a loss of pressure will occur when the prime mover driving the pump which develops the fluid pressure is stopped. The automatic clutch deactivation requires positive actuation of the clutch mechanism to reconnect the PTO shaft with the input shaft, when the prime mover is again energized. The control valve also includes a modulating sleeve which is slidably mounted on the valve spool. When the valve spool is moved to a clutch-engaged position to open a pressure inlet port to communicate same with an outlet port leading to the clutch mechanism, the modulating sleeve is moved to a position partially blocking the flow of pressurized fluid to a fluid return port to thereby modulate the pressure of the fluid flowing to the outlet port communicating with the clutch mechanism. In this way, the modulating sleeve provides smooth clutch actuation. Additionally, the control valve controls the flow of lubricating oil to the clutch mechanism and the actuation of an hydraulically actuated brake mechanism for holding the PTO shaft against rotation.

3,669,230

DRIVE FOR SHIPS

Walter Burkhardt, and Herbert Wedler, both of Witten, Germany, assignors to Lohmann & Stolterfoht Aktiengesellschaft, Witten, Germany

Filed Aug. 21, 1970, Ser. No. 65,798
Claims priority, application Germany, Sept. 5, 1969, P 19 45 797.7
Int. Cl. F16d 21/02; F16h 37/06
U.S. Cl. 192—48.8 7 Claims



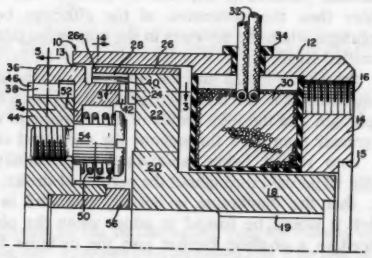
A drive train for ships with plural engines, plural input and common output reduction gearing coupled to the propeller shaft. Resilient shift clutches couple each engine to the reduction gear. Each reduction gear input is received by a hollow shaft and coupled to the input of the respective shift clutch. The hollow shaft is geared to an auxiliary shaft for driving auxiliary equipment.

3,669,231

SYNCHRONIZED ELECTROMAGNETIC CLUTCH

Arnold Schindel, Fairlawn, and Vincent E. Coyle, Wayne, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed Dec. 3, 1970, Ser. No. 94,716
Int. Cl. F16d 23/10, 27/10
U.S. Cl. 192—53 D 3 Claims

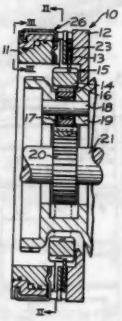


A synchronized electromagnetic clutch is provided having input and output members which are provided with circumferentially disposed teeth which align with each other by means of a flow of magnetic flux so that axially disposed teeth on the face portions of the respective members will be in position to fully engage when the members are attracted to each other.

3,669,232
RETRACTION SPRING FOR CLUTCHES, BRAKES AND LIKE DEVICES

Gerald D. Rohweder, Peoria, and Willis E. Windish, Pekin, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 3, 1970, Ser. No. 69,240
Int. Cl. F16d 19/00
U.S. Cl. 192—85 A 11 Claims

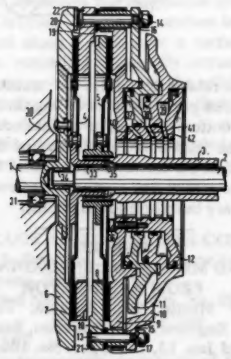


A clutch or brake comprises at least one annular piston reciprocally mounted therein to be selectively moved to compress an annular pressure plate against a friction disc for clutching or braking purposes. A plurality of circumferentially disposed U-shaped resilient pincher-like retraction springs each comprises parallel first and second leg portions connected together by an intermediate portion. The springs are arranged to have each first leg portion engage the piston to urge it towards its retracted position and away from the pressure plate. In one embodiment of this invention, employing a single piston, the second leg portion of the spring engages in a recess formed on a housing having the piston mounted therein. In a second embodiment, employing two back-to-back pistons each positioned adjacent to a friction disc, each leg portion of the spring engages a respective one of the pistons to urge them towards each other.

3,669,233
SIMULTANEOUSLY OR ALTERNATIVELY ENGAGED FLUID CLUTCHES

Helmut Kraus, and Kurt Fadler, both of Schweinfurt am Main, Germany, assignors to Fichtel & Sachs AG, Schweinfurt am Main, Germany

Filed Feb. 18, 1971, Ser. No. 116,573
Claims priority, application Germany, Mar. 4, 1970, 20 10 014.5
Int. Cl. F16d 25/10
U.S. Cl. 192—87.11 8 Claims

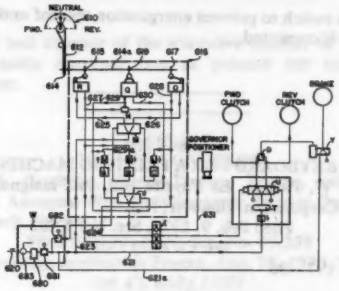


Torque is transmitted from an input shaft to either one or both of two coaxial output shafts by two input discs axially spaced and connected to the input shaft, two friction discs respectively secured on the output shafts against rotation while axially movable, and two pressure plates suspended from one of the input discs by tangentially elongated leaf springs, the friction discs and pressure plates being axially interposed between the input discs, and the pressure plates being moved toward and away from their inoperative positions by a hydraulic motor having annular pistons about the clutch axis which, with other wall elements, enclose the cylinder compartments of the motor.

3,669,234
FLUID CONTROLS FOR ENGINE AND FORWARD-REVERSE TRANSMISSION

Harold M. Mathers, Seattle, Wash., assignor to Mathers Controls, Inc., Seattle, Wash.

Continuation-in-part of application Ser. No. 730,017, May 17, 1968, now Patent No. 3,543,891. This application Feb. 24, 1970, Ser. No. 13,496
Int. Cl. B60k 29/00, 21/00
U.S. Cl. 192—.098 12 Claims



This invention relates to control mechanism for propulsion systems wherein single lever control of clutch and engine governor is provided. More specifically, this invention relates to such control mechanism wherein the sequence of application of clutch, engine governor and shaft brake actuation signals is controlled in an automatic, predetermined manner to reduce engine, clutch and gear train wear.

A propulsion control system is also provided with a master control which is connected with a replaceable air drive unit either mechanically or pneumatically. The air drive unit is premanufactured to desired specifications for performing operational functions, including automatic neutral delays between forward and reverse directional modes and speed interrupt delays, so that malfunction of one component of the air drive unit may be corrected by replacing the entire unit.

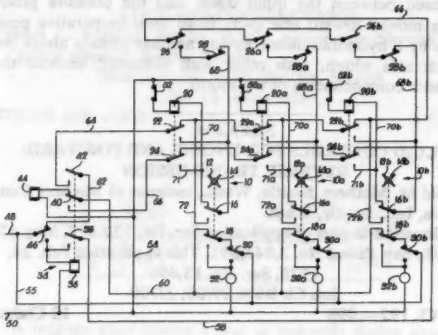
3,669,235
MALFUNCTION ISOLATION APPARATUS FOR SELECTIVE VENDING MACHINES

James A. Breeden, Oak Grove, Mo., assignor to The Vendo Company, Kansas City, Mo.

Filed Jan. 14, 1970, Ser. No. 2,830
Int. Cl. G07f 11/00
U.S. Cl. 194—10 4 Claims

A selective vending machine having switching circuitry which permits the continued purchase of other selections in the event that the dispensing mechanism of one or more selections malfunctions due to jamming or component failure. The circuitry is responsive to the operational condition of the dispensing mechanisms of the various selections and, if a particular mechanism malfunctions, the operating circuit to customer actuatable selection switches is reestablished although the normal cycle is not completed due

to the malfunction. Additionally, the vend solenoid of the malfunctioned mechanism is disconnected from its associated



selection switch to prevent energization thereof until the malfunction is corrected.

3,669,236

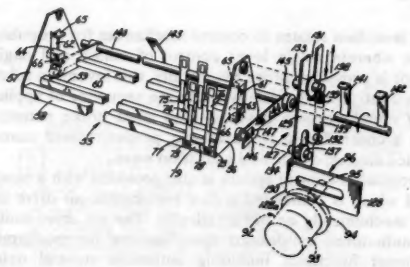
KEYBOARD FOR A PRINTING MACHINE

Richard W. Pitman, La Fayette Hill, Pa., assignor to Varityper Corporation, Hanover, N.J.

Filed Feb. 9, 1970, Ser. No. 9,502

Int. Cl. B41j *5/08*

U.S. Cl. 197—98 **16 Claims**



A keyboard operated composing machine comprising a plurality of members which effect selection of printing characters and certain other functions of the machine. Each character or function selection member has a corresponding key on the keyboard and projects into proximity to a corresponding drive element operatively connected to a cage, which is intermittently reciprocated by a power driven mechanism, when one of the keys is depressed a predetermined distance. Means are provided for selectively placing a drive element and particular selection member into engagement when a corresponding key is depressed. Further depression of the key actuates the power driven mechanism for reciprocating the cage through one cycle, thereby driving the engaged member to effect selection of the printing character or machine function corresponding to the depressed key. The design of the keyboard is such that existing manually operated machines can be readily converted to power driven ones without drastically reorganizing the basic structure of the machine.

3,669,237

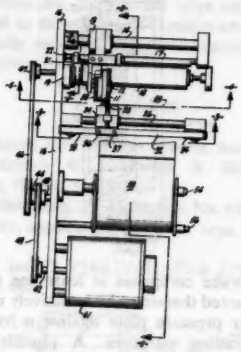
DOUBLE HELICAL PRINTER

Robert L. Wagner, Menlo Park, and Evan L. Ragland, II, Atherton, both of Calif., assignors to American Regitel Corporation, San Carlos, Calif.

Filed May 4, 1970, Ser. No. 34,437

Int. Cl. B41j *1/32*

U.S. Cl. 197—49 **13 Claims**



A helical printing wheel having an alpha and numeric helical type element paths one being offset from the other by substantially one-half a character width to provide for the elimination of dead space on the wheel.

3,669,238

CONVEYORS

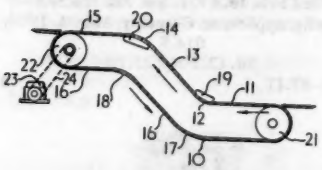
Hugh L. Folkes, St. Leonard's-on-Sea, and Graham F. Devenish, Liverpool, both of England, assignors to Dunlop Holdings Limited, London, England

Filed Sept. 14, 1970, Ser. No. 71,828

Claims priority, application Great Britain, Oct. 8, 1969, 49,340/69

Int. Cl. B66b *9/12*

U.S. Cl. 198—16 **3 Claims**



The invention relates to guides for maintaining conveyor belts in the desired path when travelling through a bend, for example at the bottom, or top, of an inclined conveyor. The guides act on the load carrying surface of the conveyor for concave bends and on the lower surface of the belt for converse bends. The guides can comprise various forms of static members, auxiliary belts or endless chains.

3,669,239

METHOD AND MEANS FOR UNLOADING ARTICLES FROM A CONVEYOR

Walter Harper Martin, San Antonio, Tex., assignor to Refrigeration Engineering Corporation, San Antonio, Tex.

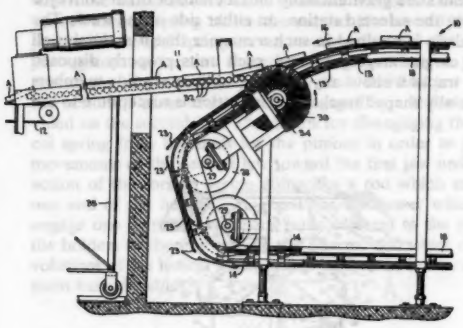
Filed Jan. 13, 1971, Ser. No. 106,173

Int. Cl. B65g *47/00, 15/00*

U.S. Cl. 198—25 **5 Claims**

Means for unloading articles from a grid-type conveyor unit comprising a rotary brush mounted for free-wheeling

rotation about an axis lying transverse to the longitudinal movement of the conveyor and being positioned on the conveyor unit below its grid and intermediate its ends, the rotary



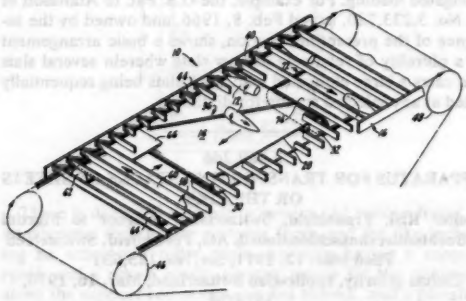
brush serving to push the products off the grid-type conveyor unit as its bristles project therethrough.

3,669,240

METHOD AND APPARATUS FOR ORIENTING ARTICLES

Edward E. Ross, San Rafael, Calif., assignor to Del Monte Corporation, San Francisco, Calif.

Filed Feb. 18, 1971, Ser. No. 116,525
Int. Cl. B65g *47/26*
U.S. Cl. 198—31 AA **13 Claims**



Method and apparatus for lengthwise orientation of elongated tapered articles. Articles of random lengthwise orientation are moved along a path over a surface having an upstanding ridge extending diagonally across the path. Conveyor means are provided to move the articles relative to the surface so that the articles spin about their longitudinal axes and migrate to a side of the surface in a direction toward their small ends where they are collected together in common orientation for conveyance to further processing steps.

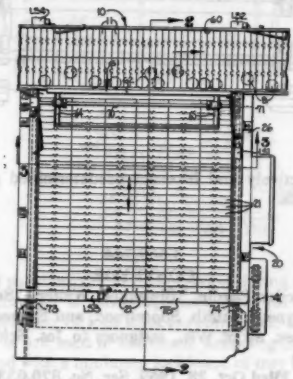
3,669,241

PACKAGE ACCUMULATING CONVEYOR

Charles Chalich, Salisbury, N.C., assignor to Taylor Manufacturing Company, Salisbury, N.C.

Filed Nov. 13, 1970, Ser. No. 89,249
Int. Cl. B65g *47/44*
U.S. Cl. 198—102 **9 Claims**

Packages are temporarily accumulated from a main conveyor line, in the event of a blockage of the packages from normal movement therealong, and are subsequently redelivered to the main conveyor line by a reversible conveyor apparatus for moving packages in either of two opposite directions away from and toward the main conveyor line. Control over movement of packages on the accumulating conveyor is exercised in response to sensing of the



presence and absence of the excessive number of packages on the main conveyor line as pointed out more fully hereinafter.

3,669,242

ROLLER CONVEYOR

Robert J. Berthelat, Plessis-Trevise, France, assignor to Societe Anonyme dite: Etablissements Jacques Berthelat et Fils, Paris, France

Filed Nov. 13, 1970, Ser. No. 89,358
Claims priority, application France, Aug. 25, 1970, 7031010
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 R **4 Claims**

A conveyor constituted of a plurality of successive series of identical rollers, each series being associated with a laterally extending feeler for controlling rollers adapted to drive rollers of an upper series in the direction of movement of a load. Movement of the rollers is predicated upon actuation of a feeler by a load so as to move the latter in predetermined indexed relationship on the conveyor.

3,669,243

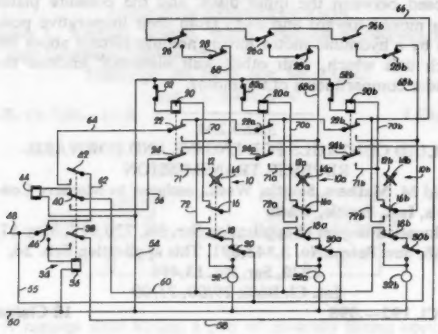
CONVEYOR ROLL ARRANGEMENT

Hermann Fischbacher, Schaffhausen, Switzerland, assignor to Georg Fischer AG, Schaffhausen, Switzerland

Filed Feb. 18, 1971, Ser. No. 116,532
Claims priority, application Switzerland, Mar. 6, 1970, 3298/70
Int. Cl. B65g *13/04*
U.S. Cl. 198—127 R **6 Claims**

A conveyor roll arrangement provides for a hollow roll body that is journalled for rotation about a roll axle that is supported by two elongated supports; and clamping means are provided for supporting each roll axle end on a support and has two normally substantially parallel, normally substantially equidistant elongated plates with aligned apertures which receive the roll axle end, and adjusting means which

to the malfunction. Additionally, the vend solenoid of the malfunctioned mechanism is disconnected from its associated



selection switch to prevent energization thereof until the malfunction is corrected.

3,669,236

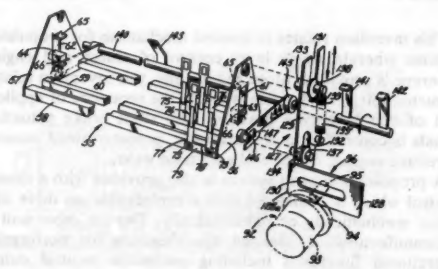
KEYBOARD FOR A PRINTING MACHINE

Richard W. Pitman, La Fayette Hill, Pa., assignor to Varityper Corporation, Hanover, N.J.

Filed Feb. 9, 1970, Ser. No. 9,502

Int. Cl. B41j *5/08*

U.S. Cl. 197—98 **16 Claims**



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3,669,237

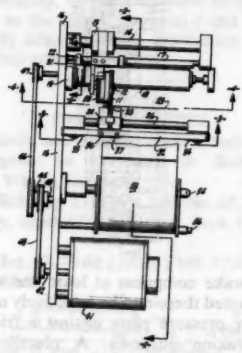
DOUBLE HELICAL PRINTER

Robert L. Wagner, Menlo Park, and Evan L. Ragland, II, Atherton, both of Calif., assignors to American Regitel Corporation, San Carlos, Calif.

Filed May 4, 1970, Ser. No. 34,437

Int. Cl. B41j *1/32*

U.S. Cl. 197—49 **13 Claims**



A helical printing wheel having an alpha and numeric helical type element paths one being offset from the other by substantially one-half a character width to provide for the elimination of dead space on the wheel.

3,669,238

CONVEYORS

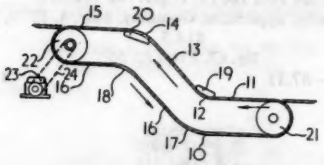
Hugh L. Folkes, St. Leonard's-on-Sea, and Graham F. Devenish, Liverpool, both of England, assignors to Dunlop Holdings Limited, London, England

Filed Sept. 14, 1970, Ser. No. 71,828

Claims priority, application Great Britain, Oct. 8, 1969, 49,340/69

Int. Cl. B66b *9/12*

U.S. Cl. 198—16 **3 Claims**



The invention relates to guides for maintaining conveyor belts in the desired path when travelling through a bend, for example at the bottom, or top, of an inclined conveyor. The guides act on the load carrying surface of the conveyor for concave bends and on the lower surface of the belt for converse bends. The guides can comprise various forms of static members, auxiliary belts or endless chains.

3,669,239

METHOD AND MEANS FOR UNLOADING ARTICLES FROM A CONVEYOR

Walter Harper Martin, San Antonio, Tex., assignor to Refrigeration Engineering Corporation, San Antonio, Tex.

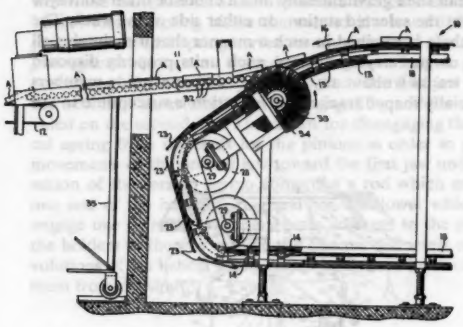
Filed Jan. 13, 1971, Ser. No. 106,173

Int. Cl. B65g *47/00, 15/00*

U.S. Cl. 198—25 **5 Claims**

Means for unloading articles from a grid-type conveyor unit comprising a rotary brush mounted for free-wheeling

rotation about an axis lying transverse to the longitudinal movement of the conveyor and being positioned on the conveyor unit below its grid and intermediate its ends, the rotary



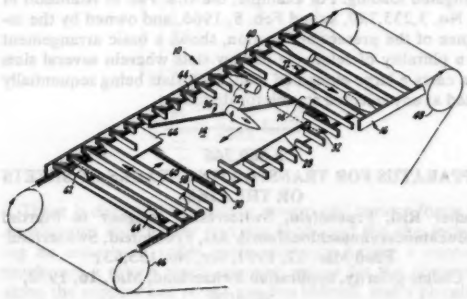
brush serving to push the products off the grid-type conveyor unit as its bristles project therethrough.

3,669,240

METHOD AND APPARATUS FOR ORIENTING ARTICLES

Edward E. Ross, San Rafael, Calif., assignor to Del Monte Corporation, San Francisco, Calif.

Filed Feb. 18, 1971, Ser. No. 116,525
Int. Cl. B65g *47/26*
U.S. Cl. 198—31 AA **13 Claims**



Method and apparatus for lengthwise orientation of elongated tapered articles. Articles of random lengthwise orientation are moved along a path over a surface having an upstanding ridge extending diagonally across the path. Conveyor means are provided to move the articles relative to the surface so that the articles spin about their longitudinal axes and migrate to a side of the surface in a direction toward their small ends where they are collected together in common orientation for conveyance to further processing steps.

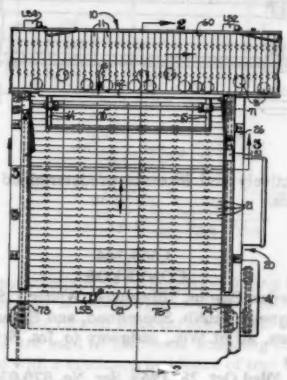
3,669,241

PACKAGE ACCUMULATING CONVEYOR

Charles Chalich, Salisbury, N.C., assignor to Taylor Manufacturing Company, Salisbury, N.C.

Filed Nov. 13, 1970, Ser. No. 89,249
Int. Cl. B65g *47/44*
U.S. Cl. 198—102 **9 Claims**

Packages are temporarily accumulated from a main conveyor line, in the event of a blockage of the packages from normal movement therealong, and are subsequently redelivered to the main conveyor line by a reversible conveyor apparatus for moving packages in either of two opposite directions away from and toward the main conveyor line. Control over movement of packages on the accumulating conveyor is exercised in response to sensing of the



presence and absence of the excessive number of packages on the main conveyor line as pointed out more fully hereinafter.

3,669,242

ROLLER CONVEYOR

Robert J. Berthelat, Plessis-Trevise, France, assignor to Societe Anonyme dite: Etablissements Jacques Berthelat et Fils, Paris, France

Filed Nov. 13, 1970, Ser. No. 89,358
Claims priority, application France, Aug. 25, 1970, 7031010
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 R **4 Claims**

A conveyor constituted of a plurality of successive series of identical rollers, each series being associated with a laterally extending feeler for controlling rollers adapted to drive rollers of an upper series in the direction of movement of a load. Movement of the rollers is predicated upon actuation of a feeler by a load so as to move the latter in predetermined indexed relationship on the conveyor.

3,669,243

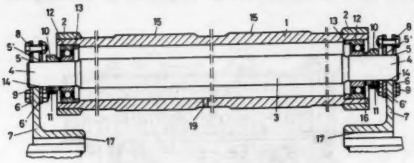
CONVEYOR ROLL ARRANGEMENT

Hermann Fischbacher, Schaffhausen, Switzerland, assignor to Georg Fischer AG, Schaffhausen, Switzerland

Filed Feb. 18, 1971, Ser. No. 116,532
Claims priority, application Switzerland, Mar. 6, 1970, 3298/70
Int. Cl. B65g *13/04*
U.S. Cl. 198—127 R **6 Claims**

A conveyor roll arrangement provides for a hollow roll body that is journalled for rotation about a roll axle that is supported by two elongated supports; and clamping means are provided for supporting each roll axle end on a support and has two normally substantially parallel, normally substantially equidistant elongated plates with aligned apertures which receive the roll axle end, and adjusting means which

can vary the distance between the plates near one end relative to the distance near the other end of said plates, so as to



clamp effectively and in exact predetermined position the roll axle ends.

3,669,244

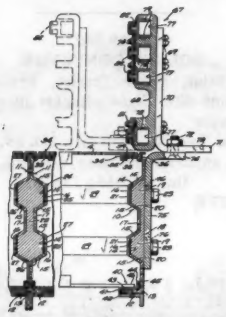
CONVEYOR

William Gordon Pagdin, Milwaukee; Walter I. Smith, Brookfield; Wayne A. Smith, Shorewood, and Eugene F. Le Tendre, Sussex, all of Wis., assignors to Jos. Schlitz Brewing Company

Filed Oct. 28, 1969, Ser. No. 870,033

Int. Cl. B65g *15/00, 17/00, 19/00*

U.S. Cl. 198—137 **13 Claims**



A conveying mechanism for conveying articles such as bottles or cans. The conveyor is fabricated from a series of modular sections connected together in a manner to provide precise alignment of the endless conveyor chains.

The endless conveyor chain is guided for movement on flexible plastic wear strips which are snapped into position on the guide tracks.

3,669,245

TILT TYPE CONVEYORS

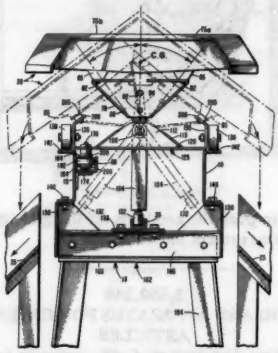
Robert D. Wooten, Rockville; Warren D. Neal, Walkersville, and George J. Einfeldt, Glen Burnie, all of Md., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed Jan. 13, 1970, Ser. No. 2,638

Int. Cl. B65g *15/00*

U.S. Cl. 198—155 **14 Claims**

A closed loop conveyor provides a simple arrangement of tracks on which roll a plurality of cargo carrying devices which are connected to each other by means of a drive chain adjacent one of the tracks and which chain is driven by a sprocket wheel. The chain is of a type having horizontally and vertically pivotal links so that flexibility is provided whereby the tracks can have horizontal bends and vertical slope, the cargo carrying devices thus being enabled to follow a track system which may extend circuitously on the floor of a warehouse and then rise to another floor and ultimately return to the first-mentioned floor. The system is provided with at least one loading station and a plurality of discharge stations at predetermined places along the track circuit. Each cargo carrying device has a normally level load carrying member which can be tilted at any selected station so that cargo can slide gravitationally into a chute or other conveyor means at the selected station, on either side of the track. The drive chain is retained in such a manner that it maintains all of the cargo carrying devices, such units properly disposed on the tracks without any need for additional guide members or specially shaped tracks. The invention is susceptible to use



in systems having load carrying members which are trays of sufficient area to support a large cargo load, for example, a postal sack, or where the load carrying members can be relatively narrow slats such that a plurality of slats support an elongated loading. For example, the U.S. Pat. to Atanasoff et al. No. 3,233,720, issued Feb. 8, 1966, and owned by the assignee of the present application, shows a basic arrangement of a plurality of relatively narrow slats wherein several slats can carry a large elongated load, such slats being sequentially tilted at any selected station for discharge.

3,669,246

APPARATUS FOR TRANSPORTING STACKS OF SHEETS OR THE LIKE

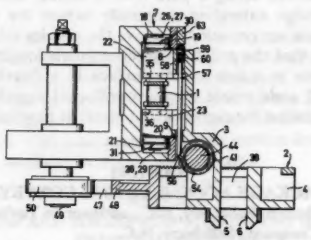
Walter Risi, Frauenfeld, Switzerland, assignor to Martini Buchbindereimaschinenfabrik AG, Frauenfeld, Switzerland

Filed Mar. 12, 1971, Ser. No. 123,531

Claims priority, application Switzerland, Mar. 16, 1970, 3875/70

Int. Cl. B42c *19/00;* **B65g** *15/00*

U.S. Cl. 198—179 **11 Claims**



Transporting apparatus for stacks of sheets in bookbinding or like machines has an endless chain coupled to equidistant holders which can transport stacks past one or more processing stations. Each holder has a first jaw which is coupled to the chain and is confined to movement in a stationary

guide member to prevent tilting or other stray movements of the holder with reference to the chain, and a second jaw which is movable toward and away from the first jaw and carries a set of parallel toothed racks meshing with pinions which are mounted on a shaft rotatable in a bore of the first jaw. A torsion spring biases the second jaw toward the first jaw, and a helical spring serves to normally hold the second jaw against movement toward the first jaw but to permit movement of the second jaw away from the first jaw under the action of cams which can be engaged by a follower provided on the second jaw. The means for disengaging the helical spring from the shaft for the pinions in order to permit movements of the second jaw toward the first jaw under the action of the torsion spring comprises a rod which engages one end of the helical spring and has a follower which can engage one or more stationary cams adjacent to the path of the holders to thereby enlarge the internal diameters of convolutions of the helical spring and to thus cause its disengagement from the shaft.

3,669,247

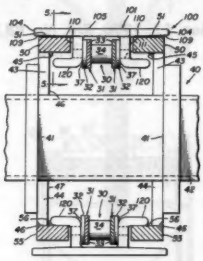
CONVEYOR SYSTEM AND ATTACHMENTS THEREFOR

Willis Clark Pulver, Oak Lawn, Ill., assignor to Velten & Pulver, Inc., Chicago Ridge, Ill.

Continuation of application Ser. No. 787,075, Dec. 26, 1968, now abandoned. This application Mar. 17, 1971, Ser. No. 125,360

Int. Cl. B65g *17/00, 15/30*

U.S. Cl. 198—189 **15 Claims**



There is disclosed a conveyor system and various forms of attachments therefor for carrying foods and the like including an articulated roller chain conveyor having a support reach and a return reach, support means for the conveyor along the support and return reaches thereof, and a plurality of attachments engagable with the roller chain conveyor and comprising a one-piece body or synthetic organic plastic resin and including a base and a pair of legs depending therefrom and a pair of support flanges extending respectively outwardly from the legs and away from each other, the base having a support surface extending in use laterally of the associated roller chain for supporting foods and the like thereon along the support reach of the conveyor, the legs thereof being engagable with the roller chain conveyor and the support flanges supporting the conveyor along the return reach thereof whereby the support surfaces are maintained out of contact with any adjacent structure along the entire path of the conveyor so as to maintain the support surfaces free of contamination.

3,669,248

TRAY FORWARDING MECHANISM

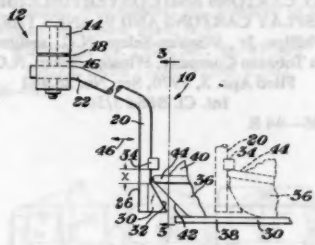
Paul Hargash, Saginaw, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 6, 1970, Ser. No. 893

Int. Cl. B65g *25/08*

U.S. Cl. 198—221 **3 Claims**

A mechanism for pushing forward filled trays such as pulp or plastic trays comprising a shoe means having a slanted face inclined to flushly engage the tray sidewall, and slightly lift the same while forwarding such that the sidewall is lifted into pressure engagement against the underside of a stop means or stop block disposed above the shoe means. The stop block and shoe means cooperately operate to place the



tray sidewall substantially in compression during forwarding. Such a mechanism is advantageously used for forwarding filled trays between various stations, conveyors, elevator lifts and the like as are used in automatic wrapping or packaging apparatus, and with a minimum incidence of tray breakage.

3,669,249

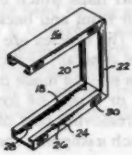
POCKET CLIP FOR AMMUNITION

James Bernard Turner Foster, 67 West 37th Street, Bayonne, N.J.

Filed July 17, 1970, Ser. No. 55,674

Int. Cl. F42b *39/00*

U.S. Cl. 206—3 **1 Claim**



An ammunition clip for carrying small arms cartridges, comprising parallel opposed squared C-section channels for slidably receiving the bases of cartridges, a strut parallel-spacing the channels, and a member for preventing the cartridges from sliding free of the channels; embodiments include a flat-unfolding one-piece clip, and one-way charging and discharging provisions.

3,669,250

POCKET ORGANIZER FOR GOLFERS

Faye M. Maretka, 13688 Hannon, Romulus, Mich.

Filed July 2, 1970, Ser. No. 51,785

Int. Cl. A45c *15/00*

U.S. Cl. 206—38 R **4 Claims**

A golf accessory for carrying in the pocket and speeding up play, which includes a flexible, triple-pouched, lightweight

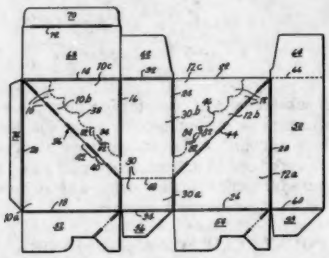
unit designed to receive and store a ball spotter in one pouch, a cleat cleaner and green repair tool in a second pouch, and one or more golf tees in the third pouch.

3,669,251

DISPLAY CARTONS AND CONVERTIBLE SHIPPING AND DISPLAY CARTONS AND BLANKS THEREFOR

Floyd L. Phillips, Jr., Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Apr. 3, 1970, Ser. No. 25,461
Int. Cl. B65d *5/50*
U.S. Cl. 206—44 R 9 Claims



Display carton for articles having a broad display side and a narrow supporting side, and which tend to be unstable when resting on their narrow sides without lateral support. The carton provides that lateral support by means of two inwardly facing support flaps which cooperatively engage the articles on both their front and back sides and also on their left and right sides. The articles are thus supported securely with the display sides generally vertical and readily visible.

The display carton may be made from a blank formed only for its construction, or it may be formed from a convertible shipping carton by removing part of the shipping carton. A blank for forming such a shipping carton is disclosed.

3,669,252

SURFACE PROTECTION MATERIAL

Ernest C. Evans, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of application Ser. No. 837,563, June 30, 1969, now abandoned. This application Mar. 8, 1971, Ser. No. 122,180
Int. Cl. B65d *85/00;* B32b *5/18, 7/02*
U.S. Cl. 206—46 FN 7 Claims

A protector sheet material serving as packing material for fine furniture and its combination with the furniture and a surrounding contacting container in such manner as to inhibit marking or buffing of the furniture in shipment. The protector sheet material has a foam surface for contacting the furniture and a paper backing for contacting the container in such manner that slippage in shipment occurs preferentially between the container and paper backing.

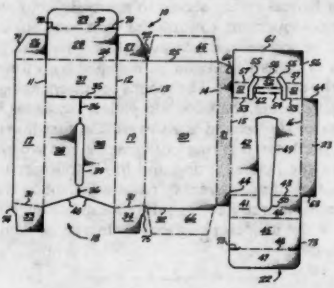
3,669,253

DISPLAY CARTON WITH INNER SHELF PANEL AND AN ARTICLE HOLDING FEATURE

Jimmy J. Hanko, Des Plaines, Ill., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Dec. 30, 1970, Ser. No. 102,579
Int. Cl. B65d *5/50*
U.S. Cl. 206—45.14 10 Claims

A display carton having an open front panel to display an article, and a central shelf panel parallel to and between the front and back panels of the carton. The carton has an article holding pocket formed by upper and lower transverse shelves hinged both to the shelf panel and to a front locking panel.



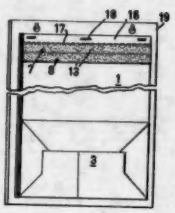
The latter panel holds the transverse shelves in place by abutting the other end closure.

3,669,254

CLOSURE STRUCTURE FOR PAPER BAGS

Chris A. Chrysanthis, Daly City, and George Chris Kourioglou, San Francisco, both of Calif., assignors to Alex A. Chrysanthis, Dale City, Calif. and Tony Haldezos, part interest to each

Filed Nov. 12, 1970, Ser. No. 88,800
Int. Cl. B65d *33/20*
U.S. Cl. 206—57 A 3 Claims



A paper bag having a bottom wall, an open upper end, a front and rear wall in opposed relation connnected by side walls foldable to collapsed positions between said front and rear walls and expandable to positions at right angles to said front and rear walls.

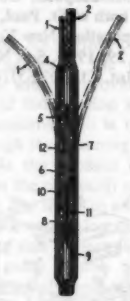
The upper marginal portion of the rear wall is co-planar therewith, and the corresponding upper marginal portion of the front wall is folded to overlie the outer surfaces of the front wall. When the upper end of the bag is collapsed over articles in the bag, the inner surface of said marginal portion on said rear wall and the outwardly exposed surface on said marginal portion on the front wall will be parallel, one above the other and contiguous therewith, and the upper end portions of said side walls will be infolded to lie between said front and side walls, as the upper free edges of said side walls terminate at said marginal portions.

A coating of a conventional non-tacky, pressure sensitive adhesive, such as latex gum is inseparably bonded to said inner and exposed surfaces on said marginal portions, which adhesive coatings are adherent to each other so that by unfolding the folded marginal portion to a position coplanar with the front wall and pressing it against the marginal portion of the rear wall the bag will be tightly sealed against ingress or egress of gaseous or liquid fluids into or out of the bag at the open end.

3,669,255
END-CAPPED CYLINDRICAL PACKAGE
Grantges J. Raymus, Spring Lake, N.J., assignor to Union Carbide Corporation, New York, N.Y.
Filed Dec. 29, 1969, Ser. No. 888,497
Int. Cl. B65d *65/44*, *85/66*
U.S. Cl. 206—59 F 13 Claims

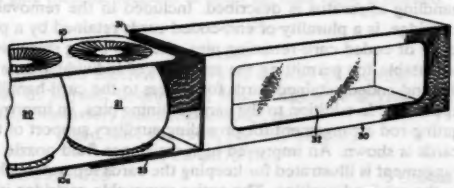
Cylindrical objects, particularly those with readily damaged ends such as rolls of sheeting and the like, are protected in special packaging comprising protective end caps and heat shrunk outer wrapping of plastic film which envelopes the cylindrical objects and the end caps.

3,669,256
SURGICAL BLADE PACKAGE
Ezekiel J. Jacob, 25 Monroe Place, Brooklyn, N.Y.
Filed May 15, 1970, Ser. No. 37,509
Int. Cl. A61b *19/02*; B65d *83/00*
U.S. Cl. 206—63.2 R 8 Claims



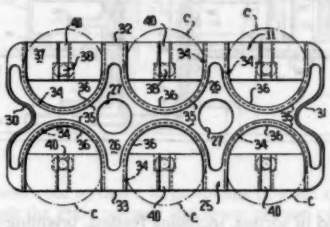
A surgical blade package having improved puncture resistance and a simplified three-ply wall structure comprises two superimposed walls, each of which is formed of an outer layer of foil material and an inner layer of a protective padding secured thereon by an intermediate adhesive stratum. The three-ply walls are sealed together adjacent or along their edges to define therewithin a compartment containing a surgical blade.

3,669,257
PACKAGE FOR A PLURALITY OF ARTICLES
Joseph A. Janicke, 2623 Texel Drive, Kalamazoo, Mich.
Filed Jan. 2, 1970, Ser. No. 76
Int. Cl. B05d *71/00*
U.S. Cl. 206—65 4 Claims



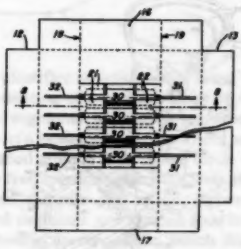
A package for a group of caramel apples incorporates a pair of locating strips having resilient projections engageable with the opposite end indentations of an apple, the surrounding package structure maintaining sufficient confinement pressure to preserve a deflected condition of the projections.

3,669,258
CARRIER-OPENER COMBINATION
Carmen T. Mascia, Westchester, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed June 19, 1970, Ser. No. 47,789
Int. Cl. B65d *17/16*, *71/00*, *85/62*
U.S. Cl. 206—65 C 16 Claims



This disclosure relates to a carrier-opener combination including a carrier and a plurality of containers having ends provided with tear-out portion, the carrier being constructed as a one-piece molded member having a plurality of T-shaped openings as viewed in horizontal plan in each of which is adapted to be disposed an enlarged head of one of the tear-out portions, each head having a longitudinal axis of a larger dimension than a transverse axis, and each of the openings or channels including an arm of the T which is generally of the size of the longitudinal dimension whereby each enlarged head and its associated opening is interlocked by imparting relative rotation between the container and the carrier.

3,669,259
CONTAINER AND BLANK THEREFOR
Henry W. Brandl, Newark, N.J., assignor to Wagner Electric Corporation
Filed July 13, 1970, Ser. No. 54,360
Int. Cl. B65d *73/02*, *85/24*
U.S. Cl. 206—65 F 4 Claims



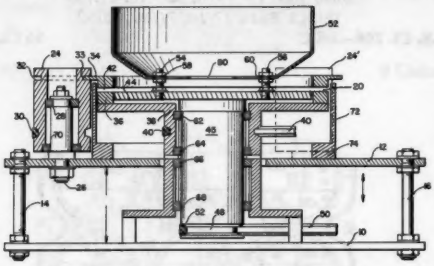
A foldable container and blank therefor, which blank includes two rows of complementary tabs and score lines defining a pair of side flaps and a pair of end flaps. Adjacent tabs are spaced by slots which accommodate the lead wires of electrical resistors positioned to underly the tabs. The side flaps are foldable over the lead wires and the end flaps are folded over the end portions of the side flaps to complete the container.

3,669,260

METHOD OF SORTING PARTICULATE ARTICLES

Kurt H. Hoppmann, and Horst A. Schober, both of Falls Church, Va., assignors to Hoppmann Corporation, Springfield, Va.

Filed Apr. 19, 1971, Ser. No. 135,225
Int. Cl. B07c 5/00
U.S. Cl. 209—73 20 Claims



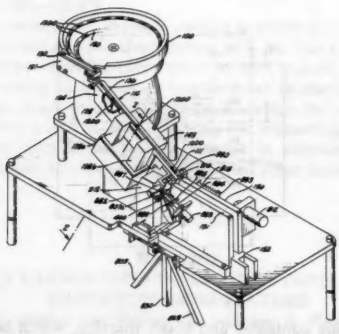
Method of sorting, including feeding, orienting and counting, particulate articles such as coins, shells, candy, pills and the like, wherein the articles are placed upon a rotating inner plane and centrifugally discharged through a peripheral gauging aperture defined at the edges of a rotating inner plane. The peripheral aperture is defined by a pair of top and bottom outer gauging rings rotated at speeds similar to or at variance with the rotating inner plane according to the character of the articles being counted. Also, the size of the gauging aperture may be varied by vertical adjustment of the top outer ring to accommodate centrifugal discharge articles of varying dimension. The discharge articles may be guided tangentially and single file past a conventional photo electric or similar counting device. The rotating inner plane may have a horizontal surface, alternately a concave, convex or contour profile.

3,669,261

HARDNESS TESTING MACHINE

Norbert L. Moulin, Placentia, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 19, 1970, Ser. No. 20,963
Int. Cl. B07c 5/00
U.S. Cl. 209—74 14 Claims



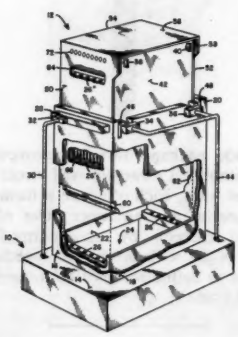
A machine and method for non-destructive testing of the crimp portions of substantially all electrical contacts in a production run and sorting accordingly of the contacts into chutes. From a hopper contacts are fed by gravity along a sloping track, and dropped one by one down a chute. A fall interrupt bracket, clamping, and pendulum cocking and releasing mechanism stops and clamps the contact. The pendulum, from which a hammer is suspended, is released to strike and rebound from the contact crimp portion. Photodiode sensing means determine the distance of rebound and accordingly a chute directing plate assembly is set to later direct the contact into the appropriate soft, too hard, or contact not tested chute. The contact fall interrupt bracket is rotated away from the contact fall path and the contact falls further and is diverted by the chute directing plates into the appropriate chute. Diversion into the non-tested chute is caused by malfunctions of the machine, e.g., failure to clamp the contact when the pendulum hammer strikes the contact. In a second embodiment there is provided an anvil having a groove to retain a specimen. A pendulum suspending a hammer portion is released and the hammer rotates around an axis to strike the specimen and rebound in a return arc path. The return path length is in accordance with hardness. On an adjustably settable swinging frame are mounted an axially aligned photosensitive element and a light source. The frame, anvil and pendulum elements are relatively positioned such that the aligned element and source are along the hammer return path so as to enable the specimen hardness to be measured.

3,669,262

REMOVABLE CARD-HANDLING CARTRIDGE

Le Roy E. Gerlach, Minneapolis; Gordon P. Johnson, and David A. Tandeski, both of St. Paul, all of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed May 29, 1969, Ser. No. 828,858
Int. Cl. B07c 3/10
U.S. Cl. 209—80.5 26 Claims

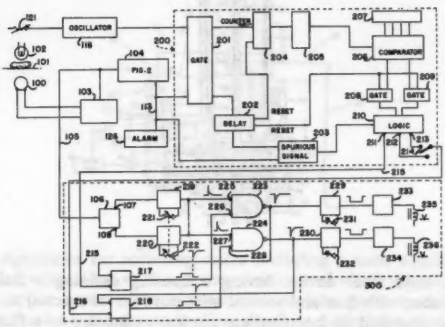


A removable card-handling cartridge for retaining a plurality of cards in a side-by-side relationship for use by a card-handling apparatus is described. Included in the removable cartridge, is a plurality of end-coded cards retained by a plurality of coded card-retaining pins, the pins being selectively actuatable for permitting the selection of individual ones of the end-coded retained cards for access to the card-handling apparatus. In addition to the card-retaining pins, an improved gating-rod arrangement for providing auxiliary support of the cards is shown. An improved high-resistance fluid nozzle arrangement is illustrated for keeping the cards separated while in the retained position. The entire removable cartridge is illustrated in a form permitting the removal of the cartridge, together with the cards retained therein, with a minimum amount of disconnection from the card-handling apparatus.

3,669,263
APPARATUS FOR SORTING PRODUCTS ACCORDING TO THEIR LENGTHS

Raymond E. Babb, Fremont, Calif., assignor to Genevieve I. Hanscom (formerly Genevieve I. Magnuson) and Genevieve I. Hanscom, Robert Magnuson, Lois J. Thomson (formerly Lois J. Duggan), trustees of the estate of Roy M. Magnuson, part interest to each

Filed Jan. 21, 1971, Ser. No. 108,310
Int. Cl. B07c *1/14*
U.S. Cl. 209—82 **14 Claims**



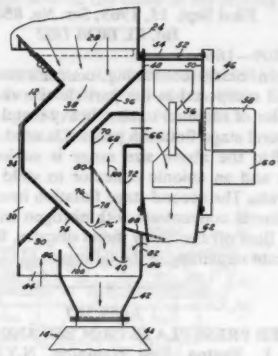
An electrical apparatus for sorting products according to their lengths. In this apparatus the products are passed through a scanning zone which is provided with a light sensitive cell and a source of illumination arranged so that illumination of the light sensitive cell is interrupted while the product is passing through the scanning zone and an electric pulse is generated while the product is in this zone. This pulse is transmitted from the photocell amplifier to the toggle flip-flop which provides one input to an And gate in the circuit which controls the energization of the solenoid valves controlling the air blasts that deflect the product according to their lengths. This pulse is also transmitted from the photocell amplifier to a signal expanding device which controls a gate between an oscillation generator and an electronic counter so that pulses are transmitted from this generator through this gate to the counter for the duration of the expanded pulse to provide a measure of the product length. The expanded pulse is also supplied to delay circuit to provide a strobe pulse to the logic of this apparatus which supplies three outputs corresponding to the long, medium and short product lengths. These outputs are connected to separate product length flip-flops which are connected to the And gates provided to the circuit controlling the air blast control valves. Each of the And gates have a pair of inputs, one of which is supplied by the output of the toggle flip-flop and the other of which is supplied by the product length flip-flops. Thus, the And gates control which of the air blast solenoid valves is to be energized. If the long product flip-flop supplies a signal to the long product And gate then the long product air blast valve is opened and if the medium or short flip-flop supplies the control signal to the medium or short And gate then the medium or short air blast valve is opened.

3,669,264
BUCKET ELEVATOR WITH GRAIN CLEANER

James G. Bryant, Greencastle, Ind., assignor to Bryant-Poff, Inc., Coatesville, Hendricks County, Ind.

Filed Nov. 14, 1969, Ser. No. 876,742
Int. Cl. B07b *4/02*
U.S. Cl. 209—138 **5 Claims**

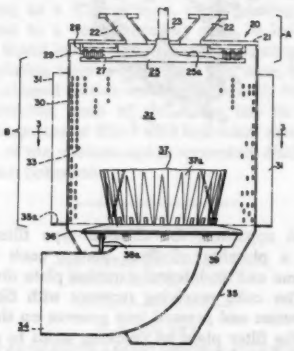
A grain cleaner for a bucket elevator having a downflow grain passage opening into an upflow air passage connected to a blower. A valve is positioned in the opening so that in a first position it restricts the flow of air with the grain through the opening so that the grain can be cleaned by an airstream created by the blower and in a second position leaves the opening unrestricted so that a large volume of grain can flow freely through the grain passage and lower portion of the air passage.



3,669,265
CLASSIFYING APPARATUS WITH ADJUSTABLE FINES OUTLET

Kurt H. Conley, 214 Grandview Avenue, Hamden, Conn.

Filed July 17, 1969, Ser. No. 842,540
Int. Cl. B04c *3/06*
U.S. Cl. 209—144 **13 Claims**



In a centripetal classifier an adjustable "fines" outlet opening is provided consisting of a circular array of vertical elongated trapezoidal segments which are mounted by shafts through apertures in a horizontal apron. There are five "control" segments spaced equally around the circle whose lower shaft ends engage five respective arcuate slots in a rotatable cam plate disposed beneath the apron. Between adjacent ones of the control segments are located four interleaved "slave" segments having shorter shafts which do not engage the arcuate slots. A horizontal rod is attached to the cam plate and passes through the enclosure and terminates in a handle outside of the enclosure. When the handle is pulled out or pushed in, the cam plate rotates and the lower shaft ends of the control segments are tilted inwardly or outwardly thereby tilting or pivoting the trapezoidal segments outwardly and inwardly to change the effective size of the outlet opening and hence the fines "cut." Since the control and slave segments are interleaved, the slave segments are similarly caused to pivot.

3,669,266

MINERALS SEPARATION PROCESS

Robert N. Sanders, and James D. Johnston, both of Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

Filed Sept. 15, 1969, Ser. No. 858,124
Int. Cl. B03d *1/02*
U.S. Cl. 209—166 6 Claims

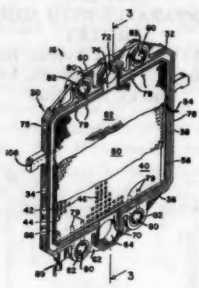
Titanium oxide containing concentrates are recovered from sand composed in the particle size range of 100 mesh and smaller of titanium oxides, heavy metal silicates, and silica. A plural stage flotation process is used. In the first stage the sand in the above size range is subjected to flotation using air and an anionic collector to yield a heavy mineral concentrate. The second stage flotation involves treating this heavy mineral concentrate with nitrogen and an anionic collector to float off the heavy metal silicates, the titanium oxide concentrate remaining in the tailings.

3,669,267

FILTER PRESS PLATE PROCESS AND APPARATUS

William L. Hutton, East Hampton, N.Y., assignor to T. Shriver & Company, Inc., Harrison, N.J.

Filed July 7, 1970, Ser. No. 52,798
Int. Cl. B01d *37/02*
U.S. Cl. 210—75 15 Claims



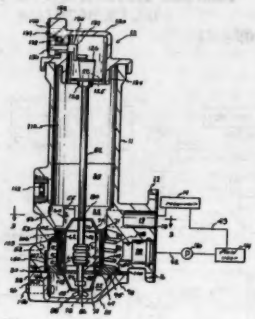
Process and apparatus for chamber-type filter presses formed with a plurality of filter plates, each having a peripheral frame and an integral partition plate dividing the frame into filter cake receiving recesses with filter cloths within the recesses and pressed into grooves on the interior periphery of the filter plate by caulking strips to retain the cloths against the surface of the plates; the plates have a first inlet port extending through the frame on one edge thereof radially outwardly of the filter cloth for communication with a corresponding inlet in adjacent filter plates, a second inlet port extending through the frame on a side thereof opposite the first inlet port for communicating with a corresponding inlet in the adjacent filter plates, both of the inlets communicate, outwardly of the filter cloths, with the recesses formed in the filter plates, and at least one outlet port on each side of the partition plate for discharging fluid flowing through the filter cloths from the filter plate. The filter press is utilized in a process for filtering fluid containing solid substances suspended therein which is initially supplied under pressure to the lower of the inlet ports and flows along the surfaces of the filter cloths towards the upper of the inlet ports whereby the fluid is recirculated and distributed through the upper ports until the press is filled with fluid, and thereafter the fluid to be filtered is supplied to both the lower and upper ports to maintain an even distribution of pressure in the press while filtered effluent is continuously drained therefrom.

3,669,268

FLUID FILTER DEVICE

Carl A. Brown, Birmingham, Mich., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Apr. 27, 1970, Ser. No. 32,225
Int. Cl. B01d *27/10*
U.S. Cl. 210—90 11 Claims



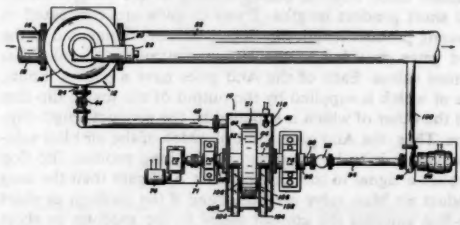
A fluid filter device having a housing defining a fluid chamber with first and second inlet portions connected to a fluid inlet and an intermediate portion connected to a fluid outlet. A cylindrical filter element is disposed in the intermediate portion and is so arranged that fluid flows from the inlet portions into the interior of the filter element, radially through its walls and into the intermediate portion. Pressure responsive means are provided to move the filter element in response to a predetermined pressure increase in the inlet portions to simultaneously open fluid communication between both inlet portions and the intermediate portion, whereby fluid flows from the fluid inlet to the fluid outlet bypassing the filter element at opposite ends thereof.

3,669,269

INDUSTRIAL PLANT FOR RECOVERING SOLIDS FROM LIQUIDS

Selwyne P. Kinney, Carnegie, Pa., assignor to S. P. Kinney Engineers, Inc., Carnegie, Pa.

Filed July 6, 1970, Ser. No. 52,580
Int. Cl. B01d *50/00*
U.S. Cl. 210—122 12 Claims

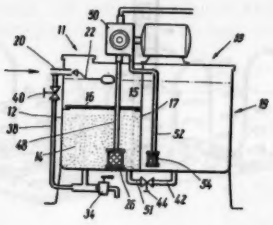


Apparatus for the removal of solids from liquids and concentrating the solids through the use of strainers. Solid-laden water or other liquid is passed through an automatic self-cleaning strainer wherein the strainer media is cleaned by clean water flowing in a reverse direction, relative to the flow of dirty water therethrough. The backwash water is passed through a low pressure rotating screen type strainer assembly where the solids are removed and the clean water returned to the outlet of the self-cleaning strainer. Accumulated solids are continuously removed from the surface of the screens and discharged outside of the strainer assembly.

3,669,270
WATER SOFTENER AND A DEVICE COMBINED THEREWITH

Ernst Flogel, Niederscheid, Germany, assignor to Francksche Eisenwerke AG, Adolfshutte, Niederscheid (Dillkreis), Germany

Filed Jan. 21, 1970, Ser. No. 4,511
Claims priority, application Germany, Jan. 24, 1969, P 19 03 492.5; Jan. 27, 1969, P 19 03 833.6
Int. Cl. B01d *23/10*
U.S. Cl. 210—123 1 Claim

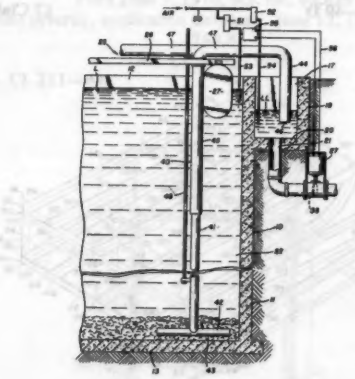


Apparatus for softening water including a tank which is filled with an ion exchange composition and which is open at its upper portion. The tank includes an inlet pipe, an outlet pipe and a valve for controlling the flow at the inlet pipe to maintain a constant level of liquid in the tank. A backwash pipe is connected between a branch on the inlet pipe and a branch of the outlet pipe. A drain cock is provided at the lower portion of the tank.

3,669,271
SIPHON TYPE SLUDGE REMOVAL SYSTEM FOR A SEWAGE SETTLING TANK

Robert F. McGivern, 1404 Holly, Columbus, Ohio

Filed Dec. 11, 1970, Ser. No. 97,078
Int. Cl. B01d *21/24*
U.S. Cl. 210—128 8 Claims

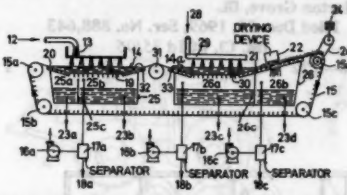


A siphon arrangement for removing sludge from the bottom of a sewage settling tank and discharging it into a sludge tank from which it is removed. The inlet of the siphon is submerged in the sewage adjacent the bottom of the settling tank and its outlet is submerged in the sludge discharged into the sludge tank. The siphon is carried by a float supported by the liquid in the settling tank, the level of which may vary as more or less sewage to be treated flows into the tank. The level of the sludge in the sludge tank will always be lower than the level of the liquid in the settling tank and it is important to the operation of the siphon to maintain constant this relationship of the levels of the liquids in the two tanks. This is accomplished by a control arrangement for controlling the discharge of the sludge from the sludge tank in accordance with variations in the level of the liquid in the settling tank.

3,669,272
BAND FILTER WITH VACUUM SUCTION CHAMBER

Friedrich Bilabel, Im Lohl 12, 674 Landau, Pfalz, Germany

Filed Apr. 30, 1970, Ser. No. 33,261
Int. Cl. B01d *33/00*
U.S. Cl. 210—152 9 Claims



A vacuum band filter comprises a continuously moving filter band having lower and upper runs with the upper run of the band forming a trough to which is fed the liquid to be filtered, and a vacuum exhaust and liquid collecting chamber disposed below and in liquid-tight engagement with the upper run of the filter band. The section of the band subjected to the vacuum action is divided into filtration and drying zones, and possibly one or more rinsing zones therebetween, with intermixing of the liquids of adjacent zones being prevented by passing the portions of the band intervening between adjacent zones above the preceding liquid level in the filter trough. More particularly, the band, in passing from the filtration zone to a rinsing zone, or in passing from a first rinsing zone to a second rinsing zone, is led roof-fashion above the liquid level, and the band, in passing from the filtration or rinsing zone to the final drying zone, has the end of the trough-shaped section extended upwardly from the liquid level. Preferably, each of the zones has its independent vacuum compartment fitted with individual means to control the degree of the vacuum and to separately discharge the different liquids collected.

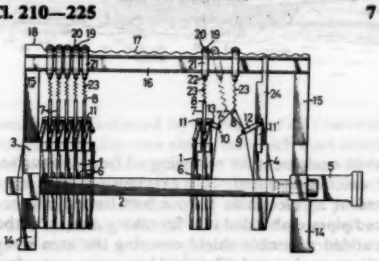
ERRATUM

For Class 210—169 see:
Patent No. 3,669,297

3,669,273
DEVICE FOR RELEASING FILTER CAKE IN FILTER PRESS

Ken-Ichiro Kurita, Sulta, Japan, assignor to Kurita Machinery Manufacturing Company, Limited, Osaka, Japan

Filed Aug. 28, 1970, Ser. No. 68,049
Int. Cl. B01d *25/32*
U.S. Cl. 210—225 7 Claims



A plurality of hangers provided with rollers are movably mounted on wavelike rails disposed above a row of filter

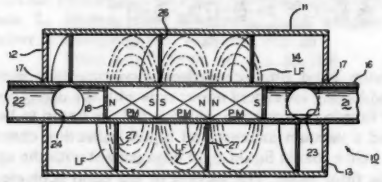
plates and in parallel with the direction in which the filter plates are moved. Springs whose upper ends are connected to the hangers support the opposite ends of a rod from which suspends the upper portion of a filter cloth disposed along the surfaces of each two adjacent filter plates. When the filter plate is released for transport, the hangers with rollers are thereby moved and the filter cloth is subjected to vibration produced by provision of the wavelike rails and springs.

3,669,274

MAGNETIC STRUCTURE FOR TREATING LIQUIDS CONTAINING CALCAREOUS MATTER

George M. Happ, and Merrill F. Kottmeier, 5800 Dempster Street, Morton Grove, Ill.

Filed Dec. 29, 1969, Ser. No. 888,643
Int. Cl. B01d *35/06*
U.S. Cl. 210—222 1 Claim



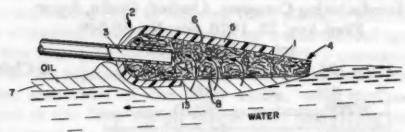
A structure for subjecting liquids having a dissolved and suspended calcareous content to magnetic lines of force. The liquid is caused to pass around a number of permanent magnets developing lines of force through which the liquid moves in a path intersecting such lines of force. This is achieved by mounting the magnets in a non-ferrous carrier with the poles thereof in opposed relationship, i.e., north to north, and south to south. The liquid is confined in such a manner so that it has a substantially helical flow path enabling the lines of force to be cut at right angles thereto.

3,669,275

APPARATUS FOR REMOVING OIL FROM WATER

Ned E. Downs, Raleigh, N.C., assignor to Hercules Incorporated, Wilmington, Del.

Filed Nov. 4, 1970, Ser. No. 86,782
Int. Cl. E02b *15/04*
U.S. Cl. 210—242 3 Claims



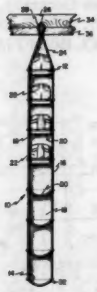
Improved equipment for removing oil from the surface of a body of water is disclosed. To a previously known apparatus comprised of an oleophilic fibrous batt having one or more perforated pipes embedded in it for taking away adsorbed oil, there is added a flexible shield covering the area where the pipe or pipes are located. The shield prevents water from entering into the area of the pipes and being pumped off with the oil.

3,669,276

SHOE DISPLAY BAG AND SYSTEM

Warren L. Woods, Salt Lake City, Utah, assignor to Wilwood Inc.

Filed Nov. 6, 1970, Ser. No. 87,468
Int. Cl. A47f *7/08*
U.S. Cl. 211—34 15 Claims



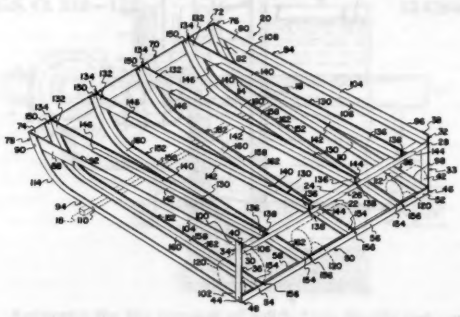
A shoe display bag which includes a flexible sheet having a top end, a bottom end, a rear section, and spaced side members; a plurality of flexible support members connected to the opposite spaced side members of the flexible sheet in a spaced relationship to form a plurality of pockets between the top and bottom ends of the sheet each sized to receive at least one shoe; and attaching means connected proximate the top end of the sheet to hang it in a substantially vertical support position. The bag can be used to market an inventory of shoes of various sizes and types by displaying each type of shoe in the inventory of each predetermined size in a separate vertically supported display bag.

3,669,277

CABINET STORAGE RACKS

William N. Beesley, Jr., 2755 Apple Blossom, Salt Lake City, Utah

Filed Feb. 10, 1971, Ser. No. 114,165
Int. Cl. A47f *7/00*
U.S. Cl. 211—49 D 17 Claims



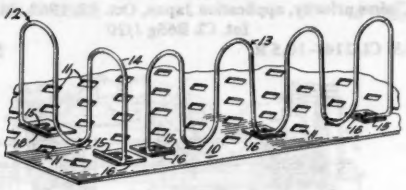
Two tier storage and dispensing racks comprising a frame of components, fabricated of sheet material, comprising in assembled combination, upper and lower ramp-defining members together with stabilizing and reinforcing members. Provision is made for quickly assembling the components without special tools, and the components, when assembled, can be installed in a household kitchen cabinet or secured to related vertical walls, or the like, alone or in combination with additional racks of like configuration arranged vertically

whereby the rack or racks are rigidly maintained for receiving cylindrical containers to be stored and sequentially removed in first-in, first-out fashion.

3,669,278
DISPLAY SHELF DIVIDER

Giles F. Heroy, Adrian, Mich., assignor to Angola Wire Products, Inc., Angola, Ind.

Filed Sept. 25, 1970, Ser. No. 75,531
Int. Cl. A47f 5/00
U.S. Cl. 211—184 **4 Claims**

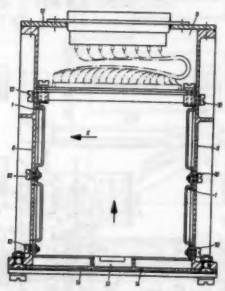


An improved divider for display shelves having a plurality of spaced openings therethrough. The divider comprises a corrugated wire, or the like, which is releasably attached between shelf openings by means of novel brackets. When attached to a shelf, the wire forms a vertical divider. Each bracket comprises a flat member with a depending tab having a pair of opposed, hooked edges for engaging a shelf opening singly or together. The spacing between the hooked edges and the member preferably tapers to less than the thickness of the shelf so that the bracket is urged against the shelf when moved in a plane parallel to the shelf. Embossings are provided on the bracket to facilitate in welding the bracket to the wire.

3,669,279
MULTIPLE HOLDING ARRANGEMENT

Ernst Burgard, Tamm, and Jurnjochen Gross, Stuttgart-Freiberg, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed June 9, 1970, Ser. No. 44,829
Claims priority, application Germany, June 12, 1969, P 19 29 768.8
Int. Cl. A47g 19/08
U.S. Cl. 211—41 **6 Claims**

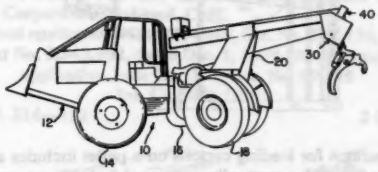


The multiple holding arrangement according to the invention consists of two guide plates of the same kind, which are specially shaped and provided with rows of lamination-like resilient web portions comprising widenings. The resilient web portions serve to compensate for thickness tolerances of plug-in units, and the widenings serve to avoid overstretchings of the web portions in the case of twisted plug-in units.

3,669,280
MOBILE LOGGING VEHICLE AND METHOD OF SKIDDING LOGS

Dwight A. Garrett, and Heinz A. Muehlbauer, both of Enumclaw, Wash., assignors to Garrett Enumclaw Co., Enumclaw, Wash.

Filed Oct. 20, 1969, Ser. No. 867,659
Int. Cl. B66c 17/06
U.S. Cl. 212—7 **3 Claims**

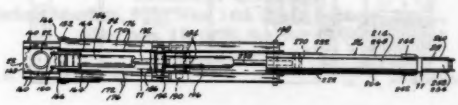


A mobile logging vehicle is provided with an arch that mounts a telescopic boom. A fairlead is secured to the outer end of the boom. A haul-in line is secured at one end to a winch mounted on the vehicle, passes over a load roller in the fairlead, and is secured at an outer end to a grapple. An opening line is secured at one end to a winch mounted on the boom and passes between spaced guide rollers on the fairlead to position the grapple in the open position on a log. With the fairlead on the outer end of the boom the grapple may be positioned by the operator of the vehicle and closed on the log at the optimum attitude. The grapple is maintained in this general attitude as the boom and haul-in line are retracted. Curved bearings are provided which allow the boom to extend and retract under loading. A method of skidding logs is also disclosed.

3,669,281
VEHICLE MOUNTED HOIST

Frank G. Woodside, Milwaukee, Wis., and Richard F. Uren, Bowling Green, Ohio, assignors to said Woodside, by said Uren

Original application June 5, 1967, Ser. No. 643,637, now Patent No. 3,543,944. Divided and this application Aug. 31, 1970, Ser. No. 68,412
Int. Cl. B66c 23/62
U.S. Cl. 212—144 **1 Claim**



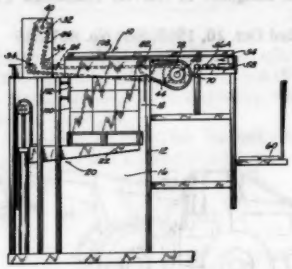
A box frame reinforced by the walls of oil reservoirs has a prefabricated tubular core sleeve on which mast bearings are assembled in inherent alignment. The structure of the main and jib booms in such as to yield high ratio of strength in relation to weight and the tying of the hinge points of the boom and operating cylinder to each other as well as to the mast gives stability. A worm gear connected to the lower end of the mast provides for 360° rotation accommodated by swiveled hydraulic manifold connections. The stabilizer legs are not only strong per se but brace the hoist frame.

3,669,282

PALLET LOADING APPARATUS

Kenneth G. Carlson, 11350 North Valley Drive, Mequon, Wis.

Filed June 8, 1970, Ser. No. 44,288
Int. Cl. B65g 57/24
U.S. Cl. 214—6 P 7 Claims



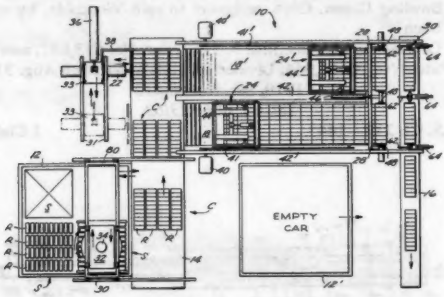
Apparatus for loading cartons on a pallet includes a pallet loading bin with a vertically reciprocal fork lift, a retractable tubular apron movable from a position covering the loading bin to a position exposing the loading bin and a sweep bar which is movable from a recessed position in a slot between two, ball-transfer tables to an extended position over the end of the retractable apron. The ends of the sweep bar are secured to a pair of spaced chains which are movable longitudinally of the apparatus to move the sweep bar from the recessed position to the extended position over the retractable apron to successively push rows of pre-arranged cartons onto the apron. When filled, the apron is retracted to deposit the cartons on a pallet.

3,669,283

METHOD AND APPARATUS FOR DEHACKING BRICK

John J. Brown, Jr., Siler City, N.C., assignor to Forrest Paschal Machinery Company, Silver City, N.C.

Filed Mar. 22, 1971, Ser. No. 126,615
Int. Cl. B65g 59/02
U.S. Cl. 214—8.5 C 10 Claims



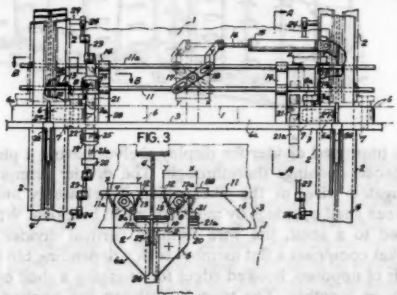
Brick stacked in courses comprised of double-layer rows within which the face sides of the individual pairs of superposed bricks may be confronting are dehacked by sequentially removing complete successive courses from each stack, and pairing courses from the upper and lower portions of the stacks such that the respective double-layer rows thereof are in alignment. Successive double-layer rows are then removed simultaneously from each pair of courses, and the upper layer of each such unit is everted and aligned with the lower layer to form a single-layer line of bricks all having their face sides facing upwardly and alternating in row groupings between bricks from the upper portions of the stacks and bricks from the lower stack portions. The blending of the bricks eliminates marked color gradients sometimes present in the original stacks.

3,669,284

CONTAINER SUPPORTING APPARATUS IN THE CONTAINER SHIP

Ichiro Tabuchi, Chiba; Akira Iwami; Yasuhiro Harita, both of Tokyo, and Toshiaki Yamamoto, Kanagawa, all of Japan, assignors to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan

Filed Sept. 28, 1970, Ser. No. 76,024
Claims priority, application Japan, Oct. 15, 1969, 44/82354
Int. Cl. B65g 1/20
U.S. Cl. 214—10.5 R 5 Claims



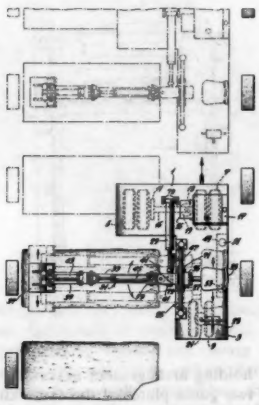
Container supporting apparatus in the container ship having container supporting members at middle stage in the container hold, the supporting members being adapted to be automatically projected into the container cell and retracted therefrom by sensing containers above the supporting members and beneath them.

3,669,285

APPARATUS FOR MOUNTING AND POSITIONING OF EXCAVATING DEVICES

Dean O. Neff, 415 West 8th Street, Rochester, Ind.

Continuation-in-part of application Ser. No. 786,343, Dec. 23, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 670,039, Sept. 25, 1967, now abandoned. This application Oct. 5, 1970, Ser. No. 77,885
Int. Cl. E02f 3/74
U.S. Cl. 214—138 C 10 Claims



The invention is an apparatus for operably mounting excavating devices, such as backhoe assemblies, especially adapted to facilitate excavating in limited spaces. The device

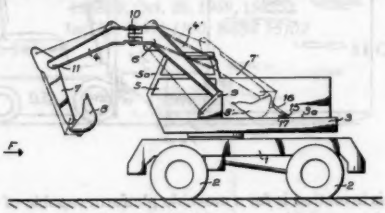
is a wheel-mounted L-shaped frame having a front transverse leg and a rearwardly extending leg. Along the rearwardly extending leg is affixed a support adapted to receive an excavating assembly, such as a backhoe, to extend operably into the angle formed by the legs of the L-shaped frame.

3,669,286

PUBLIC WORKS MACHINES

Yves M. Gauchet, Senlis, France, assignor to Societe Anonyme Poclain

Filed Dec. 30, 1969, Ser. No. 889,073
Claims priority, application France, Feb. 6, 1969, 6902730
Int. Cl. B66f 9/00
U.S. Cl. 214—138 R **4 Claims**



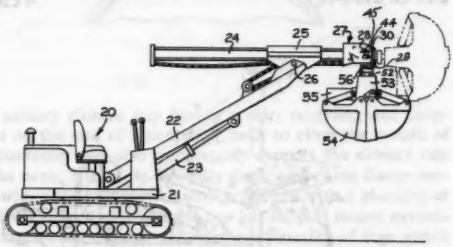
This invention relates to a public works machine comprising a platform equipped with a driver's cabin which is fast therewith and is oriented in the direction of translation of the machine, and with an operating equipment comprising a jib articulated on the platform about an axis 9 disposed substantially to the side of the driver's cabin, while this jib is contituted by two elements articulated with respect to one another about an axis which is substantially perpendicular to the axis of oscillation of the jib on the platform, wherein the axis of articulation of the two elements of the jib may be in a substantially vertical position, in which it is disposed substantially plumb with the front face of the driver's cabin, while the relative rotation of the two articulated elements of the jib may be at least equal to 90° and while rotation preventing means may integrate the two elements of the jib.

3,669,287

PRESSURE PLATE AND LINKAGE CONNECTION BETWEEN A DIPPER STICK AND AN IMPLEMENT

Roy O. Billings, 6621 West Wisconsin Avenue, Milwaukee, Wis.

Filed July 17, 1970, Ser. No. 55,910
Int. Cl. B66c 3/00
U.S. Cl. 214—147 G **11 Claims**



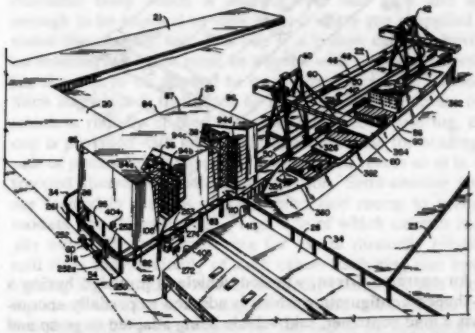
The lower end of the dipper stick of a crane has spaced plates with L-shaped engaging edges forming a female pressure member which coacts with a male pressure plate in the upper end of an implement such as a clamshell bucket. A short flexible connector is connected at its lower end to the male pressure plate and has its upper end within the space between the two plates of the female pressure member, there being means within the cavity at the lower end of the dipper stick for releasably taking up slack in the flexible connector to provide a desired amount of snugness or looseness in the connection between the bucket and the dipper stick, with, however, the male and female pressure members always being engaged in a manner which will prevent rotating movement or undesired swinging of the implement relative to the dipper stick. A guide roller in the female pressure member coacts with one of the connector links to allow the bucket to be snugged up in most positions.

3,669,288

METHOD OF HANDLING AND STORING CONTAINERS AT A SHIPPING TERMINAL

Robert R. Young, Danville, Calif., assignor to Kaiser Industries Corporation, Oakland, Calif.

Original application Mar. 29, 1968, Ser. No. 717,174, now Patent No. 3,543,952, dated Dec. 1, 1970. Divided and this application June 22, 1970, Ser. No. 59,825
Int. Cl. B65g 1/06
U.S. Cl. 214—152 **2 Claims**



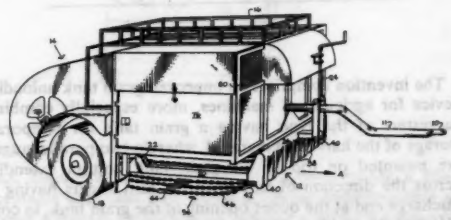
A system for handling large, heavy containers of relatively uniform shape at a shipping terminal including a vertical storage housing, a stacker crane for inserting containers into and removing containers from the storage facility, a carrier crane for loading containers into and unloading containers from a carrier at a terminal, conveyor units for transporting containers and being movable along a predetermined path into and out of transfer stations at the carrier crane and the stacker crane, a conveyer for moving containers between an input/output station for the terminal and the transfer station at the stacker crane, and a control center including computer means for coordinating the movement, storage, loading and unloading of containers by the cranes, conveyer units and conveyer.

3,669,289

HIGHWAY CLEANER

Norbert Mattison, 5102 West 14th Street, Lubbock, Tex.

Filed Aug. 11, 1970, Ser. No. 62,944
Int. Cl. B60p 1/00
U.S. Cl. 214—353 **29 Claims**



Litter and refuse along the side of a highway is picked up by dragging a series of chains along the ground. Dragging

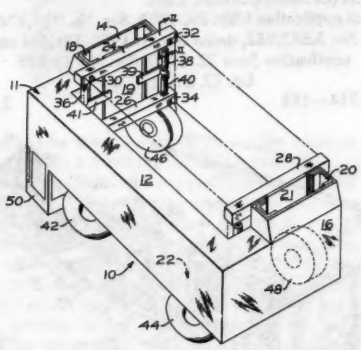
lead chains cause the litter, such as cans, to start rolling. Each lead chain terminates with a plate to which are attached two intermediate chains. Most of the refuse rides and rolls along the top of the intermediate chains, each of which terminate with another plate. Three follow chains are attached to each of these plates and the refuse rides along the top of the follow chains to be swept into a basket.

3,669,290

CONTAINER HANDLING VEHICLE

James R. Doyle, Leicester, England, assignor to Towmotor Corporation, Cleveland, Ohio

Filed June 26, 1970, Ser. No. 50,232
Int. Cl. B60p 1/64
U.S. Cl. 214—392 7 Claims



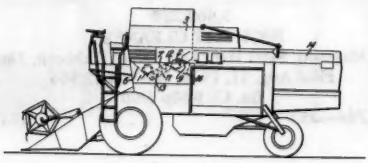
An operator driven, wheeled vehicle is provided having a U-shaped configuration which is adapted to partially encompass a load container, said vehicle being adapted to grasp and lift the load by means of retractable hooks mounted on telescoping masts on the U-shaped arms, which hooks mate with corresponding openings in container corner brackets whereby said container may be transported, lifted and stacked for storage.

3,669,291

GRAIN TANK UNLOADING DEVICE FOR COMBINES

Frans J. De Coene, Zedelgem, Belgium, assignor to Clayson N.V., Zedelgem, Belgium

Filed July 22, 1970, Ser. No. 57,249
Claims priority, application Belgium, July 30, 1969, 49355
Int. Cl. B60p 1/42
U.S. Cl. 214—519 11 Claims



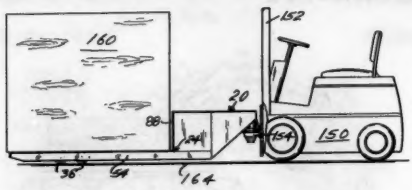
The invention comprises an improved grain tank unloading device for agricultural machines, more especially combine-harvesters of the type having a grain tank for temporary storage of the harvested material, wherein two parallel augers are mounted on top of the grain tank bottom extending across the direction of travel, one of said augers having its discharge end at the outlet opening of the grain tank, in combination therewith a third auger, mounted perpendicular to both of said parallel augers, at the grain tank side opposite to the outlet opening and having its front end close to the discharge end of the first of the parallel augers and its discharge end close to the front end of the next of the parallel augers, which itself ends at the outlet opening of the grain tank.

3,669,292

MOVABLE PLATFORM

Eugene F. Tuura, 1741 4th Avenue South, Seattle, Wash.

Filed Feb. 28, 1968, Ser. No. 709,137
Int. Cl. B60p 1/02
U.S. Cl. 214—620 1 Claim



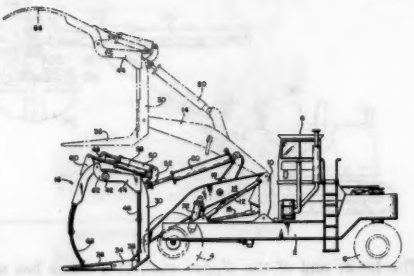
This invention is for a movable platform capable of moving containers weighing up to 50,000 pounds. The movable platform must be able to go under a container on blocks, and then be elevated so as to lift the container off the blocks for moving to a new location. The movable platform comprises a set of wheels which contact a floor and also comprises the load deck. There is an extendable means between the frame for the wheels and the load deck so that the vertical position of the load deck with respect to the wheels can be varied. Normally, these large containers are placed on blocks having a height of 6 inches. Therefore, it is necessary that the movable platform be able to go under a container on a 6 inch block. With this in mind, I have invented this movable platform which from the floor to the top of the load deck encompasses a distance of approximately 5 ½inches. With this low vertical height, the movable platform can be moved underneath a container on the 6 inch blocks and then the movable platform elevated so as to lift the container off the 6 inch blocks for movement to a new location.

3,669,293

FLEXIBLE LEAF SPRINGS FOR KICKERS AND CLAMPS FOR LOG STACKERS

Darrel L. Bryan, and Larry D. Maisch, both of Overland Park, Kans., assignors to Pacific Car and Foundry Company, Bellevue, Wash.

Filed June 26, 1970, Ser. No. 50,032
Int. Cl. B66f 9/00
U.S. Cl. 214—767 4 Claims



A material handling vehicle including a load handling head mounted upon the end of a boom, said load handling head including a load carrying platform, a pair of clamping arms and

a pair of kicking or platform sweeping arms. The clamping arms, used for retaining the load in place upon the platform, are of a flexible spring material enabling them to equalize pressure on and conform to the irregular loads without damage to the clamps. The pair of kicker arms, likewise of a spring material, are used for removing the loads from the platform and are flexible so that they may exert pressure against unevenly shaped loads without material damage to the "kickers" or load removed.

3,669,294

SAFETY CLOSURES

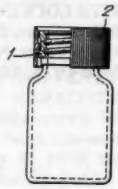
Claudio Petronelli, 45 Koromiko Road, and Gavin Muldrew Park, 192 Cornfoot Street, both of Wanganui, New Zealand

Filed June 16, 1970, Ser. No. 46,697

Claims priority, application New Zealand, June 19, 1969, 156850; Oct. 28, 1969, 158232

Int. Cl. H61j *1/00*; B65d *55/02*

U.S. Cl. 215—9 **11 Claims**



A safety closure with an outer ring mounted over the threaded cap for a bottle with an annulus extending in from the outer ring engageable in a groove on the outer surface of the cap and with a clutch engagement between the annulus and the side of the groove at one limit and preferably the upper limit of axial movement between the ring and the cap.

3,669,295

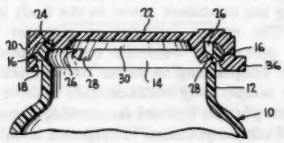
SAFETY CAP FOR CONTAINER

William Horvath, Chatham, N.J., assignor to Diamond International Corporation, New York, N.Y.

Filed Aug. 21, 1970, Ser. No. 65,971

Int. Cl. B65d *55/02, 41/22*

U.S. Cl. 215—9 **8 Claims**



A unitary closure cap having a skirt receiving and snap-fitted on the end of a container neck to close the mouth of the container and also to rotatably support the closure cap on the neck. A radially inwardly directed locking flange carried within the container mouth is formed with a plurality of relatively spaced gaps and the cap has support means extending into the mouth and supporting a plurality of lugs which project radially beneath and in axial abutment with the flange when the cap is operatively applied. These lugs are positioned and proportioned for registry with the respective gaps so that in a predetermined position of angular orientation of the cap on the container they are no longer operative and the cap may be removed from the container simply by releasing the snap-fit in known manner.

3,669,296

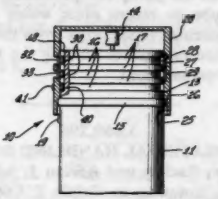
SAFETY CONTAINER

Dennis H. Drew, and Paul F. Hecht, both of 1126 Huff Street, San Bernardino, Calif.

Filed Nov. 12, 1970, Ser. No. 88,829

Int. Cl. B65d *55/02*; A61j *1/00*

U.S. Cl. 215—9 **2 Claims**



A metal aerosol type canister, the top of which is cylindrical and is provided with three annular grooves forming three annular ribs, each of which ribs has a narrow gap, all three of which gaps are aligned axially. A mark is provided on the cannister body which is aligned with said gaps and low enough to be exposed to view when a safety cap is applied to cover the canister top. This cap is a hollow cylinder having an internal lug which must be aligned with said gaps in order for the cap to be applied to or removed from the canister. Such alignment is facilitated by an external mark on the cap which is radially aligned with said lug. Above said lug, the cap is provided with an annular internal recess for holding a pair of plastic rings snapped in place in said recess so as to be trapped therein, in end-to-end relation. Semi-annular slots are formed in the cap in the area of said recess to accommodate two finger engaging lugs, one of which extends radially outwardly from each ring for use in manually rotating said rings independently of each other. Each ring also has a locking lug extending radially inwardly therefrom and these lugs must both be axially aligned with said mark on said cap and the mark on the canister for the cap to be applied to or removed from the latter. Circumferentially spaced on said rings and outwardly exposed through said semi-annular slots are code marks for enabling a person who understands the code combination to set the rings to properly align the internal ring lugs for facilitating applying the cap to or removing the same from the container.

3,669,297

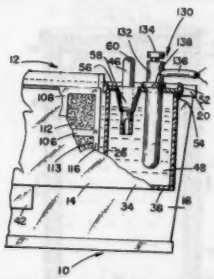
AUTOMATIC SIPHONING FILTRATION DEVICE

Allan H. Willinger, New Rochelle, N.Y., assignor to Metaframe Corporation, Maywood, N.J.

Filed June 3, 1970, Ser. No. 43,040

Int. Cl. E04h *3/20*; B01d *27/08*

U.S. Cl. 210—169 **28 Claims**



An automatic siphoning filtration device having a filter receptacle provided with communicating compartments to receive a siphon, filtering materials and a pump for use with an aquarium to circulate the aquarium water for the purpose

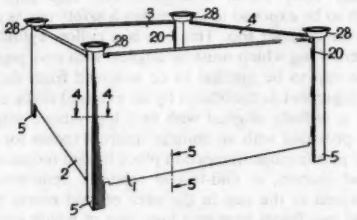
of filtration. The siphon is provided with a tube having an end submerged in the aquarium water, whereby the siphoning action is automatically started when water within the filter receptacle is removed from the siphon compartment. The filtering materials are held within containers positioned in their respective compartments located between the siphon compartment and the pump compartment. The pump is provided with a tube to return clear water to the aquarium, whereby the aquarium water flows from the siphon compartment, through the containers holding the filtering materials, into the pump compartment.

3,669,298

MATERIAL HANDLING BOX

Robert L. Silver, Racine, and Adrian J. Schmidt, West Allis, both of Wis., assignors to Triple E Corporation, Racine, Wis.

Filed Oct. 12, 1970, Ser. No. 79,779
Int. Cl. B65d *7/38, 21/02*
U.S. Cl. 220—4 R **8 Claims**



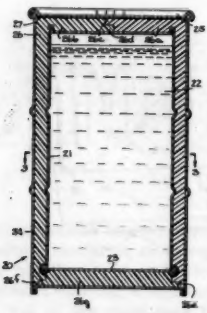
A metal material handling box for industrial use which is fabricated from sheet steel to form a particularly rigid and strong box that can be used for transporting and storing articles. The box is fabricated from four similarly formed sides which provide a double thickness leg at each corner and also provide a support for the bottom of the box at an elevated position from the floor.

3,669,299

MECHANICAL AND THERMAL DAMAGE PROTECTION AND INSULATION MATERIALS USABLE THEREFOR

Doyle P. Jones, Arlington, Va.; Robert C. Kohrn, and Donald V. Perkins, both of South Bend, Ind., assignors to Uniroyal, Inc.

Filed Oct. 30, 1970, Ser. No. 85,417
Int. Cl. B65d *7/22*
U.S. Cl. 220—10 **6 Claims**



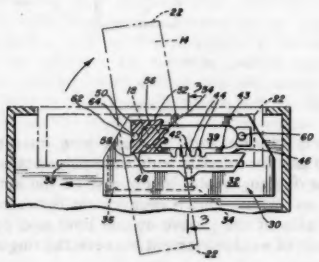
Insulation material capable of providing, for any given thickness thereof, a superior combination of thermal and mechanical damage protection, as well as products incorporating such insulation, are disclosed. The insulation is an intumescent composition made from a particulate mixture of elastomeric polymeric materials, a phenolic or comparable resin, a moisture-liberating substance, and certain other additives, and produces a hard porous char of low thermal conductivity when subjected to elevated temperatures. Although the mixture may be used in granular form, it is preferably combined with an elastic or flexible resinous binder to enable the mixture to be bonded and molded to the shape required for its use. Depending on the particular application involved, the insulation may be used with or without additional protective facings. A representative product utilizing a layer of such insulation between metal facings is a container construction designed for the shipment of hazardous materials such as radioactive wastes, the construction being characterized by an inner steel drum within an outer steel drum and having the space between the drums filled with the insulation.

3,669,300

CONTAINER WITH LOCKING ACTUATOR

Michael D. Thomas, 640 Fern Court, Elmhurst, Ill.

Filed Dec. 30, 1970, Ser. No. 102,680
Int. Cl. B65d *43/16;* **E05f** *11/14*
U.S. Cl. 220—36 **13 Claims**



A container including a main body having a cover pivotable between open and closed positions. Drive and locking means are interposed between the container body and cover for pivoting the cover between its open and closed positions and locking the container cover to the body in either of the positions. The means includes an actuator supported for reciprocal movement between extreme positions on the body, with cooperating surfaces on the actuator and the cover. The cooperating surfaces have a drive means on the intermediate portion thereof for moving the cover between opened and closed positions in response to movement of the actuator between extreme positions, and first and second locking means adjacent opposite ends of said intermediate portion of said cooperating surfaces for maintaining the cover in either position, as desired.

3,669,301

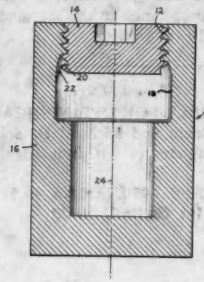
UNDERCUT THREAD CLOSURE

Donald E. Witkin, Warren, Pa., assignor to National Forge Company, Irvine, Pa.

Filed June 11, 1970, Ser. No. 45,449
Int. Cl. B65d *41/04*
U.S. Cl. 220—39 R **8 Claims**

A thread system for use on screw type closure structures for high pressure vessels and the like wherein a helical fillet blends the undercut of the vessel wall to the first thread, thereby lessening stress concentrations in the vessel wall. The fillet is shaped such that at all points around the helical path

described by the leading surface of the first thread, the transition from that surface into the undercut is by means of



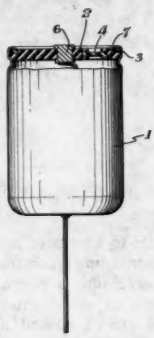
the desired fillet. In some embodiments the fillet is in the form of a quarter of an ellipse.

3,669,302

MOLDED COVER AND VENT FOR ELECTROLYTIC CAPACITORS

Mark Markarian, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Aug. 24, 1970, Ser. No. 66,367
Int. Cl. B65d *51/16*
U.S. Cl. 220—44 R 10 Claims



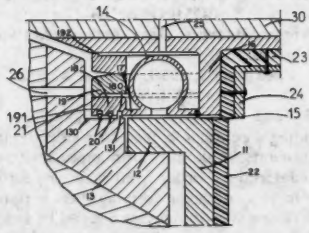
A molded cover of high melting organic polymer is molded around a low melting vent of organic polymer. The combination is suitable for sealing electrolytic devices.

3,669,303

SEAL FOR THE COVER OF A VESSEL WITH A CIRCULAR OPENING

Pierre Launay, 108 Boulevard de la Reine, Versailles, France

Filed Jan. 13, 1971, Ser. No. 106,210
Claims priority, application France, Feb. 4, 1970, 7003962
Int. Cl. B65d *53/00*
U.S. Cl. 220—46 MS 8 Claims



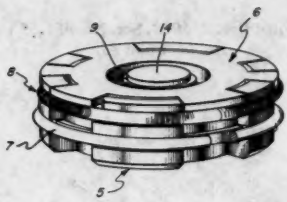
A seal for location between a vessel and a closure, which seal is of omega cross-section, one base being fast with the closure and one base bearing through resilient material on the vessel.

3,669,304

RELEASABLE CLOSURE MECHANISM

Harvey Gordon Hansen, Sunnyvale, Calif., assignor to Sylvania Electric Products Inc.

Filed Jan. 4, 1971, Ser. No. 103,619
Int. Cl. B65d *45/32*
U.S. Cl. 220—55 K 7 Claims



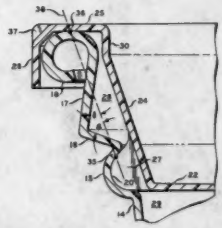
This releasable closure comprises a butterfly spring separating a base plate and a movable weight that are coaxial and have interspersed fingers on the peripheries thereof. A first loose garter spring is located completely in first annular grooves in the peripheries of the plate fingers and under first lands on the weight fingers to keep the plate and weight axially spaced apart. A second tight locking ring spring is located in second annular grooves in the plate fingers and on second lands on the weight fingers. The second spring extends beyond the peripheries of the base plate and weight and protrudes into a mating groove in a vehicle to hold the closure securely therein. Forward motion and rotation of the vehicle and closure causes the loose spring to be ejected. Upon impact with the ground, forward movement of the weight compresses the butterfly spring and causes the second spring to slip off the second lands and completely into the second grooves to release the closure and a self-erecting antenna in the vehicle.

3,669,305

CONTAINER AND CLOSURE THEREFOR

Alfred W. Kinney, Kansas City, Mo., and Frederick P. Marshall, Park Forrest, Ill., assignors to Phillip Petroleum Company

Filed Feb. 5, 1970, Ser. No. 8,960
Int. Cl. B65d *43/10*, *21/02*, *51/16*
U.S. Cl. 220—60 R 7 Claims



A container having a closure retention groove is combined with a closure having a retention bead. The closure is formed so that the portion thereof between the closure rim and the retention bead grips the portion of the container between the retention groove and the container rim to secure the closure to the container. The container wall section between the points on the rim and retention groove comprises two inter-

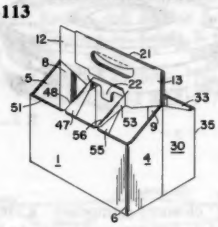
secting substantially straight sidewall sections, each being inclined at an acute angle to a line through the points of contact of the container and closure. One of the substantially straight sidewall sections also serves as a lower stacking shoulder which rests upon the rim of the next lower container in a stack of identical containers.

3,669,306

ARTICLE CARRIER HAVING IMPROVED PARTITION STRUCTURE

Homer W. Forrer, Jonesboro, Ga., assignor to The Mead Corporation

Filed Dec. 2, 1969, Ser. No. 881,558
Int. Cl. B65d *75/00*
U.S. Cl. 220—113 **9 Claims**



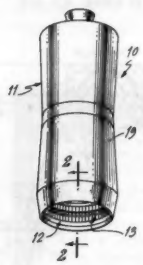
A basket-style article carrier having bottom, side and end walls and a multi-ply handle connected at its ends with the end walls is provided with improved transverse partition elements wherein a partition strip is foldably joined to one ply of the handle in conventional fashion and a reinforcing strip is foldably joined to the partition strip along the generally transverse fold line. An anchoring tab foldably joined to the end of the reinforcing strip which is remote from the handle is secured to the side wall in flat face contacting relation by means of glue or other suitable means. Preferably the anchoring tab is foldably joined to a portion of the top edge of the associated side wall. If desired, more than one partition structure may be employed.

3,669,307

PLASTIC CUP DISPENSER

Adolph Pfund, Milford, N.J., and Morton Sobel, Easton, Pa., assignors to Sobel Industries, West Easton, Pa.

Filed Nov. 6, 1970, Ser. No. 87,450
Int. Cl. B65h *1/00*
U.S. Cl. 221—63 **4 Claims**



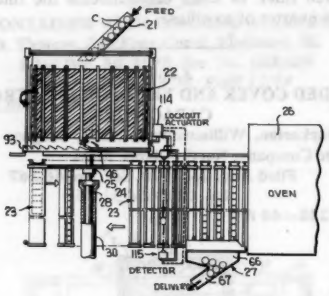
A plastic cup dispenser includes a housing to receive a stack of plastic cups, and a resilient plastic strip which is mounted within the housing above, and in encircling relation to the bottom opening of the housing so that projections extending inwardly from the strip in a circular array and having a special shape will be engaged by rims of the cups at the bottom of the stack to ensure the one-at-a-time withdrawal of the cups through that bottom opening. Each projection has an inwardly convex surface of substantial vertical extent formed with a central recess to achieve the desired one-at-a-time withdrawal, and each projection is preferably in the form of a bowed ribbon joined to the remainder of the strip only at its upper and lower ends.

3,669,308

TRANSFER ASSEMBLY FOR CYLINDRICAL MEMBERS

Ben E. Werner, Golden, and Richard D. Setty, Lakewood, both of Colo., assignors to UR Industries, Inc., Golden, Colo.

Filed June 8, 1970, Ser. No. 44,515
Int. Cl. B65g *60/00*
U.S. Cl. 221—119 **19 Claims**



This disclosure relates to a transfer assembly for automatically transferring or distributing a continuous supply of members from a main source into a plurality of carriers. The transfer assembly includes a continuously rotating drum loader having storage chutes spaced about the periphery thereof for continuously receiving members. The carriers into which members are to be distributed are mounted so that they pass around the axis of rotation of the drum loader in unison therewith and in alignment with lower ends of the chutes. Each chute is provided with a gate at its lower end and means are provided for serially operating the gate to dispense a predetermined number of members into each carrier. Each carrier is also provided with escapement mechanisms which repeatedly dissipate the energy of the falling members received therein and which also serve to spaced vertically adjacent members within a carrier.

3,669,309

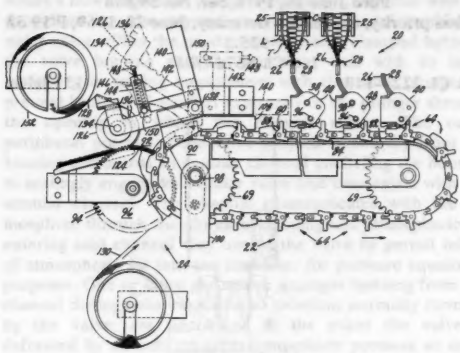
MACHINES FOR SEQUENCING ELECTRONIC COMPONENTS

Vincent P. Romeo, Danvers, Mass., assignor to USM Corporation, Flemington, N.J.

Filed June 2, 1970, Ser. No. 42,830
Int. Cl. B65h *5/26*
U.S. Cl. 221—225 **5 Claims**

For providing a continuous feed strip of programmed electronic components, a plurality of components, releasable in selected predetermined order from their respectively unique sources, is fed to a conveyor carrying them seriatim to a taping station. The conveyor includes a series of articulated carriers movable relative to the delivery zones of dispensers and adapted, respectively, to exercise full and continuous control of each component until released therefrom to be taped.

Production is thereby insured, even at a high rate of operation, of a programmed component supply tape, its components uniformly and closely spaced as desired and none missing or damaged.



3,669,310

BALLING GUN

Eli A. Zackheim, Norwich, Conn., assignor to Jules Silver, Norwich, Conn.

Filed Oct. 15, 1969, Ser. No. 866,639
Int. Cl. B65h *3/00*
U.S. Cl. 221—279 1 Claim

A tablet dispenser is disclosed which is particularly adapted to function as a balling gun for animals. It includes an elongated barrel portion for holding a plunger and a widened mouth portion with an accordion fold for retaining tablets in place.

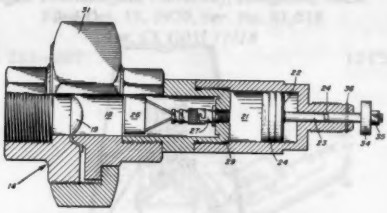
3,669,311

UNDERSEA PRESSURE SENSITIVE ACTUATOR

Virgil A. Folden, Jr., Falmouth, and Johnny Miller, Jr., Fredericksburg, both of Va., assignors to The United States of America as represented by the Secretary of the Navy

Filed Apr. 27, 1970, Ser. No. 31,893
Int. Cl. B67b *7/24*
U.S. Cl. 222—3 1 Claim

A pressure sensitive actuator for use in underwater recovery systems. A diaphragm is selected so as to burst at a predetermined depth. Water entering the actuator, through the ruptured diaphragm, actuates a salt water battery which, in turn, fires a cartridge. The cartridge gases act upon a piston to displace an attached rod thereby actuating a high pressure valve causing inflation of flotation bags.

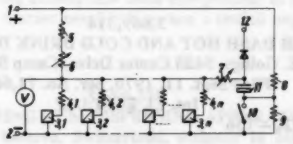


3,669,312

CONTROL ARRANGEMENT FOR FLUID DISPENSERS

Alexander Kuckens, Bellevue 20, 2 Hamburg 39, and Wolfgang Niehaus, Sandheide 15, 2104 Hamburg-Neugraben, both of Germany

Filed Dec. 8, 1969, Ser. No. 883,094
Claims priority, application Germany, Dec. 7, 1968, P 18 13 318.1
Int. Cl. G01f *15/02*
U.S. Cl. 222—70 11 Claims



Fluid flow taking place from a dispenser and is blocked or released by an electromagnet. The release is effective by a start signal such as a dropped coin or a pushed button. The flow of fluid continues for a time determined by a timing circuit. The timing circuit has a counter which counts the number of start signals by causing counting stages to become energized in dependence of the number of start signals received. Energization of the different counting stages causes a variation in the current supplied to a resistance-capacitance timing circuit, thus varying the timing of the timing circuit to allow the same quantity of fluid to flow for each individual portion dispensed, regardless of the static pressure of the fluid remaining in the dispenser.

3,669,313

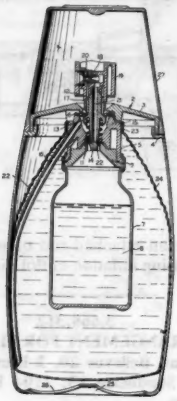
AEROSOL DISPENSER HAVING FLEXIBLE COLLAPSIBLE PRODUCT CONTAINING SAC

Jean Marand, and Felix Rousselot, both of St. Benoit, France, assignors to Ciba-Geigy Corporation

Continuation of application Ser. No. 766,549, Oct. 10, 1968, now abandoned. This application Feb. 2, 1971, Ser. No. 112,055
Claims priority, application France, Oct. 11, 1967, 124018
Int. Cl. B05b *7/30*; B65d *35/28*
U.S. Cl. 222—95 3 Claims

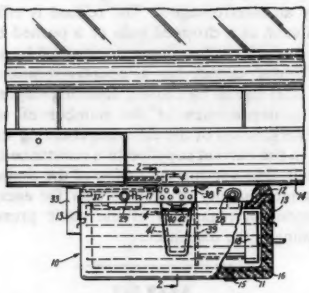
An aerosol dispenser of the type in which the propellant and the product to be dispensed are kept separate until dispensed. The dispenser has an outer container with a valve means on said outer container. A propellant cartridge is provided in said outer container and is coupled to said valve means. At least one fluid tight flexible sac is provided in said outer container and contains the product to be dispensed in a

fluid condition, and means is provided coupling said sac to said valve means for aspirating the contents of the sac when



the valve means is opened to allow propellant to flow from said propellant cartridge. The sac collapses due to the atmospheric pressure around it as the contents are aspirated.

3,669,314
UNDER DASH HOT AND COLD DRIVE DISPENSER
Harford E. Goings, 5428 Center Drive, Camp Springs, Md.
Filed Sept. 11, 1970, Ser. No. 71,607
Int. Cl. B67d *5/52*
U.S. Cl. 222—136 **4 Claims**

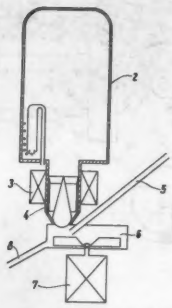


A hot and cold drink dispenser for under dash mounting in motor vehicles includes a refrigeration unit for cooling water in an insulated container, a heat exchanger associated with the radiator water for heating water and a plurality of flavor concentrates mounted on the side of the container. Vacuum from the vehicle engine provides the force for moving water and flavors in the apparatus and a dispenser head is provided for dispensing hot water, cold water, and one or more flavors as desired.

ERRATUM

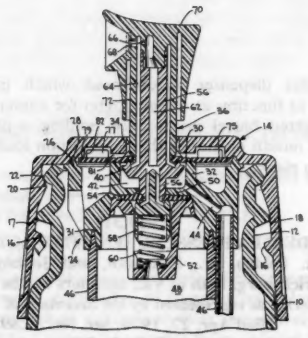
For Class 222—129 see:
Patent No. 3,669,358

3,669,315
LIQUID-DISPENSING APPARATUS HAVING ELECTROMAGNETICALLY OPERATED VALVE
Alexander Kuckens, Belevue 20, 2 Hamburg 39, Germany
Filed June 26, 1970, Ser. No. 59,868
Claims priority, application Germany, June 28, 1969, P 19 32 935.2
Int. Cl. B67d *1/08*
U.S. Cl. 222—148 **13 Claims**



A concentrate container has a downwardly directed outlet passage provided with an internal valve seat and an outlet downstream thereof. A valve member is accommodated in the outlet passage and consists of a tubular first portion of magnetizable steel within which but with clearance from the inner surface of which a valve seat engaging streamlined second portion is centered and positioned by sharp-edged struts or webs extending across the clearance. An electromagnetic device is so positioned as, when energized, to lift the valve seat engaging second portion out of contact with the valve seat so that concentrate can pass from the outlet under the influence of gravity. Means is provided for admixing water with the thus-dispensed concentrate to produce a beverage or other mixed liquid.

3,669,316
CARTRIDGE VALVE DISPENSER WITH PRESSURE REGULATING VALVE
Douglas F. Corsette, Los Angeles, Calif., assignor to Diamond International Corporation, New York, N.Y.
Filed July 27, 1970, Ser. No. 58,583
Int. Cl. B67d *5/54*
U.S. Cl. 222—193 **12 Claims**



A valve plunger movable through an opening in the wall of the product container, cooperates with a valve housing which

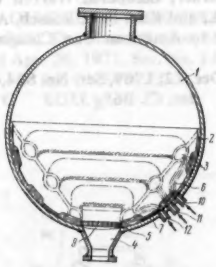
receives product from the container and with a propellant cartridge carried by such housing within the container. Discharge of the propellant through a passage in the plunger in aspirating relation to a passage from the valve housing induces a flow of product which is discharged together with the propellant into the atmosphere. A resiliently deformable annular valve within the product container is clamped between the valve housing and the container wall with its inner periphery in sealing engagement with the valve plunger to prevent leakage of product externally of the plunger through the opening in which the plunger moves. The outer peripheral portion of the valve projects outwardly from the housing and across an annular channel encircling the housing to sealingly engage an annular valve seat concentric with the annular channel. The channel communicates with the atmosphere through the aforesaid opening and atmospheric air entering said channel may unseat the valve to permit influx of atmospheric air into the container for pressure equalizing purposes. One or more grooves or passages opening from the channel through the valve seat at locations normally covered by the valve, are uncovered in the event the valve is deformed by an internal superatmospheric pressure so as to be depressed into the annular channel and rocked about the inner edge of the valve seat whereby to uncover the vent passage.

3,669,317

DEVICE FOR UNLOADING BULK MATERIAL FROM RESERVOIRS

Georgy Semenovich Ivchenko, Donetskoi oblasti, pereulok Semafory, 5"b"; Anatoly Mikhailovich Berestovoi, Donetskoi oblasti, Prospekt Metallurgov, 35, kv. 42; Vladislav Fedorovich Khanchas, Donetskoi oblasti, 24 kvartal, 19, kv. 4; Nina Ivanovna Orlitskaya, Donetskoi oblasti, ulitsa Sechenova, 57, kv. 60, and Anatoly Pavlovich Nikodimov, Donetskoi oblasti, ulitsa Artema, 46, kv. 33, all of Zhdanov, U.S.S.R.

Filed May 7, 1969, Ser. No. 822,559
Int. Cl. B65g 3/12
U.S. Cl. 222—195 **3 Claims**



A device is provided for unloading bulk materials from reservoirs by the use of the energy of a compressed gaseous medium. The device comprises elastic sloped walls disposed in the reservoir at the bottom thereof, the walls having a plurality of spaced passages therein which are connected to a system for the intermittent supply of a gaseous medium into the passages for imparting vibratory motion to the sloped walls, i.e., movement towards and away from the walls of the reservoir. Between the passages in the elastic walls there are provided porous sections which permit the flow of compressed gaseous medium therethrough and into the reservoir to impart fluidity to the bulk material therein.

3,669,318

FEEDER FOR HIGH PRESSURE AUTOCLAVE

Mehmet Adnan Goksel, Houghton, Mich., assignor to Michigan Technological University, Houghton, Mich.

Filed Oct. 15, 1970, Ser. No. 81,018
Int. Cl. G01f 11/18
U.S. Cl. 222—307 **12 Claims**

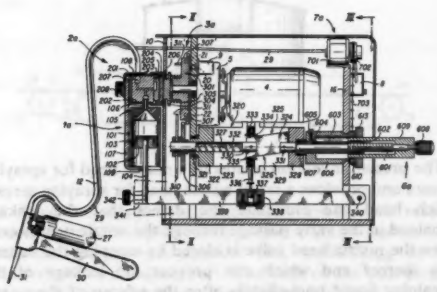
A material handler for a high pressure autoclave includes a combination of a body and a dished in cross section material carrier relatively arranged in a telescoping manner. The material carrier can be withdrawn from the body to a carrying position or telescoped into the body to eliminate the volume of the carrier. The body and carrier move in a passage to alternately position the carrier at a material transfer opening or in the autoclave. The carrier is telescoped into the body after material is removed therefrom, and while still in the autoclave, to eliminate its volume and avoid transferring atmosphere from one position to the other. The body and carrier combination has a sealed engagement in the passage.

3,669,319

METERING CUM DISPENSING APPARATUS

Manuel Sanz, Geneva, Switzerland, assignor to Micromedic Systems, Inc., Philadelphia, Pa.

Filed Apr. 1, 1969, Ser. No. 812,177
Claims priority, application Switzerland, Apr. 2, 1968, 4868/68; Aug. 19, 1968, 12496/68
Int. Cl. G01f 11/06
U.S. Cl. 222—309 **16 Claims**



Apparatus for repeatedly metering and dispensing, by means of a piston pump, predetermined quantities of liquid via a switching valve to which are connected inlet and outlet conduits for the liquid. The pump and the valve are actuated in timed relation by a drive mechanism powered by an electric motor which is controlled by selectively operable means that automatically cut off the motor supply once the piston has completed a stroke. There are also provided means for varying the length of the piston stroke to adjust the volume

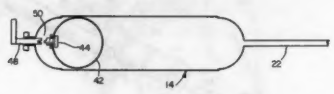
of said quantities and means for displaying to the outside a number indicative of this volume.

3,669,320

RESERVE LIQUID STORAGE AND DISPENSING DEVICE

Thomas H. Purcell, Jr., Raleigh, N.C., assignor to ESB Incorporated

Filed Oct. 13, 1970, Ser. No. 80,268
Int. Cl. B67d 5/42
U.S. Cl. 222—389 4 Claims



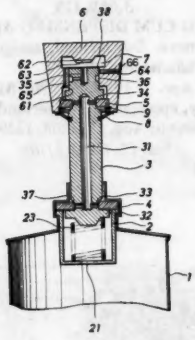
A reserve liquid storage and dispensing device is described in which liquid stored in a container is dispensed by the motion of a piston. The piston is a tank containing high pressure gas, the gas supplying the energy required to cause the piston to move.

3,669,321

NOZZLE HEAD FOR SPRAYING AEROSOL

Rinnosuke Susuki, Tokyo; Hiroshi Hoshi, Narashino; Shinichi Araki, Funabashi, and Takashi Ohshita, Tokyo, all of Japan, assignors to Raion Yushi Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 15, 1970, Ser. No. 28,907
Claims priority, application Japan, Apr. 18, 1969, 44/30142; 44/35682; 44/35688
Int. Cl. B65d 83/00
U.S. Cl. 222—402.24 6 Claims



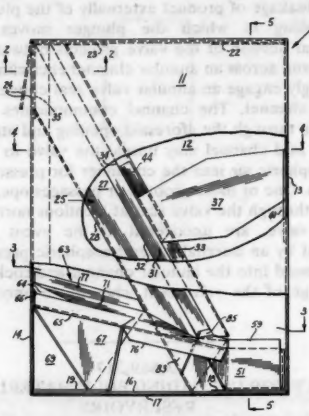
The present invention relates to a nozzle head for spraying aerosol and provides a novel nozzle head for spraying aerosol which head can eliminate the defect that the leakage remained in the valve passage through the nozzle occurs even when the nozzle head valve is closed by stopping the depression thereof and which can prevent the leakage of the remaining liquid immediately after the release of the nozzle head. The construction which characterizes the present invention is such that two valves are interposed in the passage through which the aerosol liquid is sprayed, the first valve being disposed adjacent to the container while the second valve, adjacent to the nozzle orifice; and the spring for the second valve is weaker than that for the first valve so that when spraying is stopped, the first valve is first closed so that the flow of the liquid from the container is stopped and then the second valve adjacent to the nozzle orifice is closed so that the leakage of the liquid remained in the valve passage can be completely prevented.

3,669,322

MEASURING AND DISPENSING CONTAINER

Andrew C. Popivalo, 2028 Webster Street, Sanger, Calif.

Filed Apr. 8, 1970, Ser. No. 26,530
Int. Cl. G01f 11/26
U.S. Cl. 222—454 3 Claims



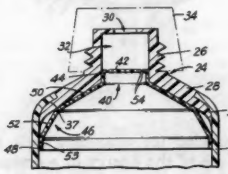
A container for free flowing granular and other particulate materials having a dispensing chute arranged to dispense a predetermined quantity of material each time the container is inverted. The chute and the supporting structure therefor folds with the container so that the container can be shipped flat and when erected for filling the chute and its supporting structure are simultaneously erected into operating position.

3,669,323

ONE-WAY VALVE INSERT FOR COLLAPSIBLE DISPENSING CONTAINERS

Royce Kenneth Harker, Lombard; Warren Wilson Prickett, Elgin, both of Ill., and Kurt Fritz Roesch, Andernach, Germany, assignors to American Can Company, New York, N.Y.

Filed Dec. 12, 1969, Ser. No. 884,484
Int. Cl. B65g 35/38
U.S. Cl. 222—490 7 Claims

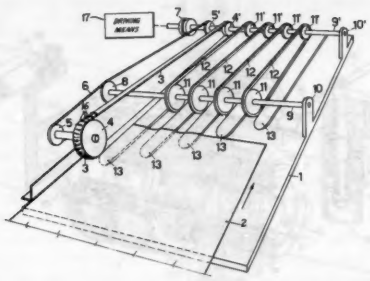


A collapsible dispensing container tube having a thermoplastic headpiece united to a tubular body with a one-way valve insert positioned in the upper part of the tube to perform an anti-suck-back function by blocking the flow of air into the tubular body when manual pressure on the tubular body is released after the dispensing of a desired portion of product from the tube.

3,669,324
COVER MATERIAL FEEDING AND FORMING APPARATUS FOR A QUILTING MACHINE

Giannino Landoni, 133, Via Verdi, 21012 Cassano Magnago, Italy

Filed July 15, 1970, Ser. No. 55,138
Claims priority, application Italy, July 19, 1969, 19856 A/69
Int. Cl. A41h *43/00*; D06j *1/00, 1/10*
U.S. Cl. 223—32 7 Claims

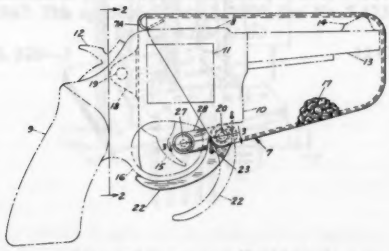


Apparatus for feeding cover material into a quilting machine and simultaneously forming the same for covering longitudinal strips of elastic padding supported on a lower base material in order to obtain padding materials tin the form of attached tubes filled with said strips. The cover material is fed along a plane surface by a belt provided with nails. Such surface has projecting parts with the same cross-section and size as the padding tubes to be manufactured. The cover material is gradually forced to adapt itself to such projecting parts by means of chains running in the cavities therebetween and in the same direction as the cover material itself. These chains are driven by pairs of sprockets mounted on two parallel shafts and at the end of said projections, the cover material is contacted with the padding strips and directed to the needles of the quilting machine.

3,669,325
QUICK DRAW HOLSTER

Ben R. Furman, 9651 Elm Street, Taylor, Mich.

Filed Apr. 26, 1971, Ser. No. 137,309
Int. Cl. F41c *33/02*
U.S. Cl. 224—2 C 7 Claims

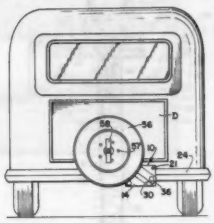


A rigid holster having a spring biased, pivotable, arcuate lever arm positively engaging the trigger guard to prevent the displacement of the firearm from the holster. The lever is released from locking position by a spring loaded push button. The replacement of the firearm and the locking and unlocking may be accomplished by a simple one hand movement.

3,669,326
SPARE TIRE AND WHEEL CARRIER FOR TRAVEL TRAILERS, MOTOR HOMES, PICKUP TRUCKS, CAMPERS, AND THE LIKE

Chester S. Podraza, Chicago, Ill., assignor to Blackstone Manufacturing Co., Inc., Chicago, Ill.

Filed Dec. 4, 1969, Ser. No. 882,151
Int. Cl. B62d *43/02*
U.S. Cl. 224—42.21 5 Claims

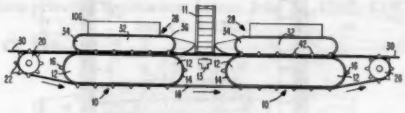


A spare tire and wheel carrier secured to the rear bumper of a vehicle, particularly a travel trailer and/or motor home, pickup truck, camper, and the like, whereby the tire and wheel is normally positioned to be carried on a pivotal arm supported on a mounting member behind the rear door of the vehicle, with the arm maintained at an inclined angle so that the weight is supported on the mounting member, and with the arm adapted to be pivoted through an arc past center to position the tire and wheel outwardly away from the door to permit the door to be opened, and wherein the arm is in a vertical plane substantially parallel with the rear door of the vehicle.

3,669,327
FORMS FEEDING TRACTOR AND JAM DETECTOR THEREFOR

Albert A. Dowd, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 5, 1970, Ser. No. 61,208
Int. Cl. B65h *29/12*
U.S. Cl. 226—11 7 Claims



A fixed belt support is peripherally grooved to receive headed tractor drive pins which project through perforations within an endless pin support belt conforming to the periphery of the fixed support. The ends of the pins project through similar perforations in an overlying endless drive belt and also a perforated form carried thereon. A spring biased "floating" pressure shoe carries a third endless cover belt having similar perforations which finally receive the ends of the pins and sandwichs the form between the drive belt and the cover belt to facilitate forms alignment and continuous precision in feeding.

A microswitch on a fixed block is operatively coupled to a forms detecting lever carried by the shoe to sense the absence of a form, the presence of a correct form or jamming of the form between the floating pressure shoe and the underlying drive belt.

3,669,328

YARN FEEDING AND TENSIONING APPARATUS

Luigi Castelli, Via Opifici 16, Gandino, Italy

Filed June 12, 1970, Ser. No. 45,667
Claims priority, application Italy, June 21, 1969, 18520 A/69
Int. Cl. B65h *17/32*
U.S. Cl. 226—97 2 Claims

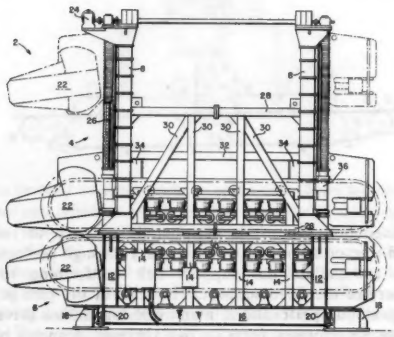
A device for controllably guiding yarns in textile machines consisting of a hollow member through which the yarn is caused to pass by nozzle means which controllably supply compressed air into said hollow member.

3,669,329

PIPE TENSIONING UNIT

James P. Blanchet, Arlington; Charles M. Hotes, Edmonds, and Thomas J. Reynolds, Seattle, all of Wash., assignors to Western Gear Corporation, Everett, Wash.

Filed Nov. 2, 1970, Ser. No. 85,951
Int. Cl. B65h *17/24*, *25/22*
U.S. Cl. 226—108 8 Claims



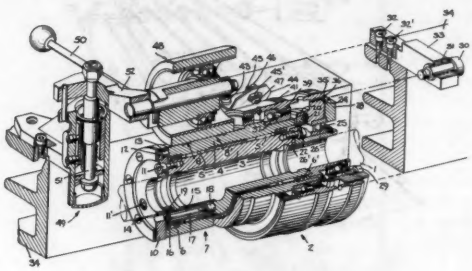
Apparatus for laying offshore pipelines including a pipe tensioning device for maintaining a constant tension and thereby an optimum catenary upon the pipe during the laying thereof including a pair of pipe-engaging, opposed caterpillar type tractor units operable to impart continuously effective, longitudinally applied forces to the pipe line extending from the apparatus into the body of water and resting upon the bottom.

3,669,330

YARN HANDLING APPARATUS

Helmut Ritter, Wattwil, Switzerland, assignor to Heberlein Patent Corporation, New York, N.Y.

Filed July 7, 1970, Ser. No. 52,787
Claims priority, application Switzerland, July 8, 1969, 10397/69
Int. Cl. G11b *19/22*
U.S. Cl. 226—174 11 Claims



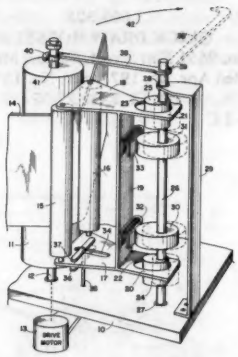
Apparatus for driving individual selected driving rollers in a multipstation textile machine wherein the rollers are shiftable longitudinally between a braking position and an accelerating position on a main drive shaft.

3,669,331

FREE FLOATING PRESSURE ROLLER MEANS AND RETRACTING MECHANISM FOR FILM DRIVE

Walter Renold, 7044 Mary Ellen Avenue, Hollywood, Calif.

Filed Mar. 4, 1971, Ser. No. 120,965
Int. Cl. G11b *15/29*
U.S. Cl. 226—176 5 Claims

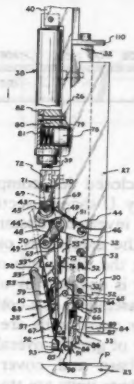


Slippage of a wide film engaged by a driving capstan is prevented by resiliently urging a pair of rollers mounted in a free floating yoke structure against the drive capstan. The yoke structure is guided by a frame means which also includes cam means for effecting the urging of the yoke structure. A lever element terminating in a hook is arranged to engage a bearing on the free end of the capstan to stabilize the same when the pressure rollers are in engagement with the capstan.

3,669,332
TERMINAL TAB STRIP AND APPLICATOR

Quentin Berg, c/o Berg Electronics, Inc., 142 Reno Street, New Cumberland, Pa.

Filed Apr. 9, 1970, Ser. No. 27,099
Int. Cl. H01r 9/16
U.S. Cl. 227—80 10 Claims

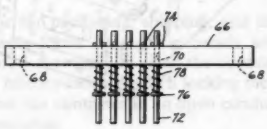


A flexible strip provides elongated weld tabs integrally connected sequentially and lengthwise, being also grouped in integral transverse sets. The strip is fed downwardly into the guide slot of a feeding, staking and cut-off assembly, which includes a vertically acting feed and cut-off sub-assembly slideably mounting a feed bar, and a tab staking and cut-off punch sub-assembly, to which the first named sub-assembly is pivoted. The assembly is reciprocated vertically, with a slight relative lost motion of the relative stationary feed bar, by means of a reversing air cylinder operation of the staking punch sub-assembly, which in turn drives the feed and cut-off sub-assembly through a toggle unit; and that unit produces a swinging action of the feed and cut-off sub-assembly relative to the other sub-assembly to clamp and unclamp the terminal strip, to cut the latter into tab sets, and to stake the tabs into a printed circuit panel.

3,669,333
BONDING WITH A COMPLIANT MEDIUM

Alexander Coucoulas, Bridgewater Township, Somerset County, N.J., assignor to Western Electric Company Incorporated, New York, N.Y.

Continuation-in-part of application Ser. No. 651,411, July 6, 1967. This application Feb. 2, 1970, Ser. No. 7,473
Int. Cl. B23k 21/00
U.S. Cl. 228—3 12 Claims

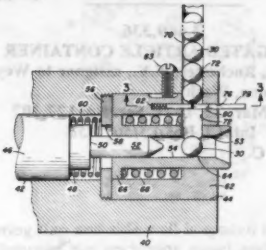


A plurality of independently displaceable pins are employed to apply bonding pressure to a compliant medium at widely spaced bonding sites. The pins permit compensation for workpiece irregularities between the bonding sites such as substrate waviness, warpage, lack of parallelism, etc., while the compliant medium compensates for localized workpiece irregularities such as variations in the thickness of leads and/or land areas.

3,669,334
METHOD AND APPARATUS FOR FEEDING DISCRETE PARTS TO A COLD HEADING MACHINE

John W. Meisterling, Rocky Hill, Conn., assignor to Contacts, Incorporated, Wethersfield, Conn.

Filed June 30, 1970, Ser. No. 51,291
Int. Cl. B23k 21/00; B23p 3/02
U.S. Cl. 228—3 4 Claims



The machine is described with reference to the production of cold bonded composite electrical contacts. A cold heading machine is altered to permit contact facing material to be fed into the coning punch assembly in discrete pieces such as balls, cylinders or the like. Ordinarily, pieces severed from a wire feed are delivered directly to the header die. In the present invention, the coning punch acts as a carrier of this material to the header die. The preferred apparatus is inherently self-timing, loading the contact facing material into the coning punch at its "rest" position. Optionally, individual body and facing components may be initially bonded as by brazing, and fed to the cold heading machine by the apparatus of the invention, eliminating wire feed and severing entirely. By virtue of the invention, facing and body components need not be of the same diameter, coning shapes are optimized, and a larger variety of heading diameters, facing thicknesses and heading ratios may be obtained. Stronger interfacial bonding is also achieved.

3,669,335
BACKING STRIP FOR SINGLE SIDE WELDING OF STEELS

Masayasu Arikawa; Motomi Kano; Katsuro Iio, and Toshio Tanaka, all of Kanagawa-ken, Japan, assignors to Kobe Steel Ltd., Kobe-shi, Hyogo-ken, Japan

Filed July 14, 1969, Ser. No. 841,420
Claims priority, application Japan, July 26, 1968, 43/53151
Int. Cl. B23k 5/22
U.S. Cl. 228—50 4 Claims

The disclosure is an improved type of a backing strip particularly adapted for use in the single side welding of steels. The means of the invention is suitable for welding operations such as at a high location or in the field and permits the welding of a curved surface or of complex shapes owing to the flexibility afforded by its special design. The backing strip embodied in this disclosure consists of a cylindrical body made of a heat contractive synthetic plastic with flux filled therein, the former of which is designed to shrink by heat to thereby enclose the flux which consists of powder or grain metal oxides, metal carbonates or the like.

Upon application of the said backing strip to the undersurface of the welding groove, there is provided flexibility sufficient to compensate for the misalignment in the undersur-

faces of the welding groove or in the curved surface, thus presenting superior adaptability over conventional methods.

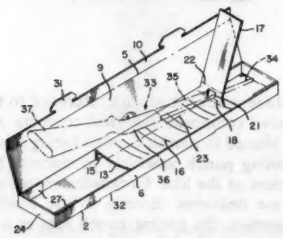
ERRATUM

For Class 228—5 see:
Patent No. 3,669,478

3,669,336
ELONGATED ARTICLE CONTAINER

Ray M. Robinson, Rochester, N.Y., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Mar. 23, 1971, Ser. No. 127,107
Int. Cl. B65d *5/50, 5/58*
U.S. Cl. 229—14 C 8 Claims

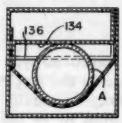


An elongated container for a rifle or the like is of basically standard design but has an improved pressure plate and locking flap assembly. A pressure plate and supporting panel are hingedly connected to a side panel and the pressure plate is provided with an outwardly extending locking flap which has a longitudinal dimension approximately equal to that of the pressure plate. An aperture is provided in the locking plate in order to accommodate the article to be packed. The locking flap is folded back over the rifle and is locked in place after which the external front closure panel and top panel are locked in the closed position.

3,669,337
PACKAGING SLEEVE WITH HEAT-SHRINKABLE PROTECTION SLING AND BLANK FOR PRODUCING SAME

Glenn E. Struble, New York, N.Y., assignor to Diamond International Corporation, New York, N.Y.

Filed Dec. 16, 1969, Ser. No. 885,413
Int. Cl. B65d *5/58, 81/10, 85/30*
U.S. Cl. 229—14 BA 6 Claims

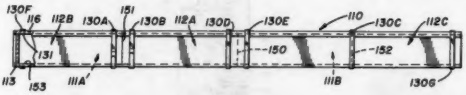


A tubular packaging sleeve and blank in which a heat-shrinkable membrane or sleeve is integrally incorporated in the blank construction, and after assembly of the blank and insertion of an article in an erected sleeve, the application of heat causes a protective sling to be intimately formed about the article and to suspend the article in protective relationship in a package.

3,669,338
PACKING CONTAINER OR THE LIKE

Richard R. Cornell, Newcomerstown, Ohio, and William F. Koehler, State College, Pa., assignors to Richard Cornell & Associates, Newcomerstown, Ohio

Filed July 15, 1970, Ser. No. 55,192
Int. Cl. B65d *13/00*
U.S. Cl. 229—23 BT 5 Claims

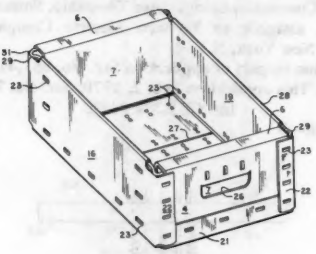


A container is disclosed that comprises one or more base units of substantially U-shaped section over which one or more cover units of inverted, substantially U-shaped section are received with the side walls on the cover units contiguously embracing the side walls on the base units. Each base and cover unit is engaged by at least one strap means when the units are assembled as a container. Moreover, when multiple base and/or cover units are employed to provide a composite container of greater overall length than the length of the individual base and cover units, the abutments between successive base units are staggered in relation to the abutments between successive cover units. This result can best be achieved by employing modular base and cover units. In any event, both the base and cover units are preferably folded into their U-shaped configuration from sheet material that has been incised with V-shaped rabbets along predetermined fold lines that are preferably reinforced with hinge means. End closure members may be positioned within the container transversely thereof and retained either by frictional engagement with the base and cover units or other securing means operative therebetween.

3,669,339
CONTAINER HAVING MULTI-PLY BOTTOM AND UPRIGHT WALLS

Paul Schilling, Bogalusa, La., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Apr. 13, 1971, Ser. No. 133,614
Int. Cl. B65d *13/00*
U.S. Cl. 229—23 A 7 Claims

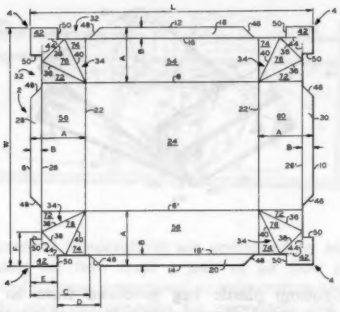


A container or box made of two integral blanks of flexible material is formed with panels hingedly connected together, which provide walls all of multi-ply thickness with each wall of one pair of opposite walls comprising spaced apart plies forming an air space therebetween. The bottom wall is of at least three ply thickness to provide strength and cushioning. Anchor flaps hingedly connected to at least some of the panels of each blank secure the container into a substantially rigid structure. Stitching in the form of staples secure various of the anchoring flaps and wall plies together.

3,669,340
FOLDED, ONE-PIECE, LIQUID-TIGHT TRAY AND BLANK FOR FORMING SAME

Alfred W. Kinney, Kansas City, Mo., assignor to Phillips Petroleum Company

Filed Dec. 1, 1970, Ser. No. 94,003
Int. Cl. B65d *5/24*
U.S. Cl. 229—31 **10 Claims**

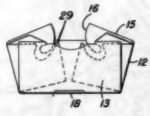


A folded, one-piece, liquid-tight tray and blank for forming same. The blank is of rectangular configuration having corners. A plurality of score lines are formed on the blank for forming a tray having a bottom, side and end walls, outwardly extending edge rims, and a corner fold line of triangular configuration in each tray corner for forming a corner supporting column. The corner fold lines define a tab at each corner each of which has two cut lines for inserting associated edge rims therein and maintaining the folded supporting column.

3,669,341
DISPENSER FOR CONTINUOUS BUSINESS FORMS

William W. Hughes, Eggertsville, N.Y., assignor to Westvaco Corporation, New York, N.Y.

Filed Sept. 15, 1970, Ser. No. 72,356
Int. Cl. B65d *5/22*
U.S. Cl. 229—33 **1 Claim**



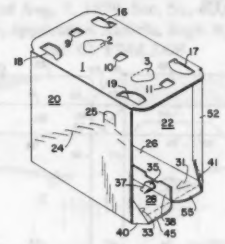
A container for packaging, shipping, and dispensing continuous business forms having top panels and side panels which are flared outwardly to open the container permitting access to the interior thereof with a locking means on the top panels to retain the container in an open condition during the dispensing operation.

3,669,342
ARTICLE CARRIER

James B. Funkhouser, Doraville, Ga., assignor to The Mead Corporation

Filed Dec. 11, 1969, Ser. No. 884,298
Int. Cl. B65d *33/16*
U.S. Cl. 229—40 **5 Claims**

An article carrier of the open ended wrap-around type having foldably joined top, side and bottom walls is provided with article engaging and retaining structure at its bottom corners which structure comprises a holding tab disposed astride the carton corners and which is foldably joined along angularly related fold lines to an anchoring strap and an anchoring panel which in turn are foldably joined respectively to the carton side and bottom walls. The fold line between

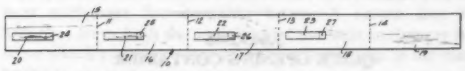


the anchoring flap and side wall is spaced inwardly from the fold line between the anchoring panel and the bottom wall and the anchoring panel is foldably joined to the bottom panel so as to accommodate movement of the anchoring panel out of the plane of the bottom wall during the formation of the carrier.

3,669,343
HOLDER FOR TETRAHEDRON PACKAGES

Darwin R. Howard, 140 Melrose Avenue, Kenilworth, Ill.

Filed Mar. 1, 1971, Ser. No. 119,705
Int. Cl. B65d *5/50, 71/00*
U.S. Cl. 229—42 **7 Claims**

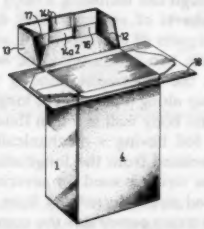


A support device for tetrahedron packages consisting of a single strip of material folded into a pleated structure consisting of alternating V- and inverted V-shaped compartments, the vertices of the V's being proportioned to snugly receive the vertical fins of the tetrahedron packages, and a support strip extending across each of the open ends of the V's arranged to support the horizontal fins of each of the tetrahedron packages.

3,669,344
CARTON WITH CAPPED LID

Rolf Urban Andersson, Malmo, and Lennart Gerhard Persson, Lund, both of Sweden, assignors to AB Akerlund & Rausing, Lund, Sweden

Filed Mar. 10, 1970, Ser. No. 18,075
Claims priority, application Sweden, Mar. 31, 1969, 4485/69
Int. Cl. B65d *5/66*
U.S. Cl. 229—44 CB **8 Claims**



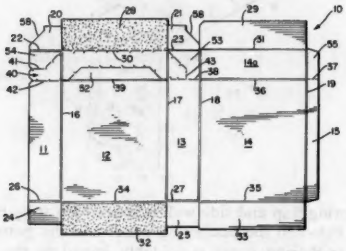
A carton provided with a capped lid formed by folding flaps inwardly to form a lid which fits over and around the top of the carton to enable reclosing after opening. An inner seal may be provided so as to view the contents before opening the carton and means for engaging the recloseable capped lid with the carton may also be provided.

3,669,345

RECLOSABLE COMPOSITE PACKAGE

Raymond A. Cote, Charlotte, N.C., assignor to Riegel Paper Corporation, New York, N.Y.

Filed Jan. 7, 1971, Ser. No. 104,730
Int. Cl. B65d 5/54
U.S. Cl. 229—51 TS 4 Claims



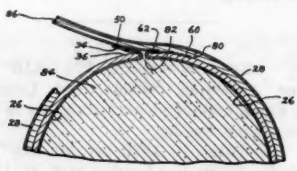
The disclosure relates to a package for foodstuffs and the like including a sealed, reclosable pouch or bag carried by a sealed parallelepiped carton structure. The carton is opened by the removal of a tear strip and is so configured that the tear strip removal forms a telescopically reclosable, lockable chest-type cover, i.e., a cover which is adapted to completely overlap and be securely "locked" to the side and front walls of the opened carton upon hinging movement about a horizontal axis in the carton rear wall.

3,669,346

QUICK OPENING CONTAINER

James R. Leezer, Jeffersonville, Ind.; Francis R. Reid, Minneapolis, Minn.; Charles H. Turpin, Louisville, Ky., and Jack J. Rejsa, Minneapolis, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed July 3, 1969, Ser. No. 838,926
Int. Cl. B65d 3/26
U.S. Cl. 229—51 BP 12 Claims



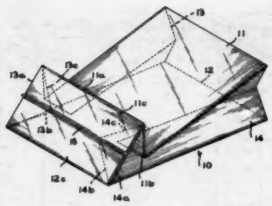
A cylindrical dough can including a body wall formed from two rectangular sheets of approximately equal size bonded together with two pairs of corresponding edges out of alignment so as to form two extensions. The body wall is made into a tube with the extensions bonded together in overlapping relationship along a permanent longitudinally extending seal. Within the body wall is a thin fluid impervious sealing liner, e.g., a foil having a mechanically weak but fluid tight inner seal isolated from the longitudinal seal. A provision such as a tear string is used for severing the outer sheet along a line spaced circumferentially from the overlap area. When pulled, the string penetrates the complete thickness of the outer sheet thereby providing a flap which serves as a pull tab. When the pull tab is lifted, tension is transmitted from the outer extension to the inner extension through the permanent seal thereby separating adjacent cut edges of the inner sheet from one another. The inner seal is then opened.

3,669,347

FLAT-BOTTOM PLASTIC BAGS

Gerald M. Platz, Champaign, and James B. Honn, Arcola, both of Ill., assignors to National Distillers and Chemical Corporation, New York, N.Y.

Original application Jan. 12, 1970, Ser. No. 2,020, now Patent No. 3,606,822. Divided and this application June 7, 1971, Ser. No. 150,616
Int. Cl. B65d 31/10
U.S. Cl. 229—58 2 Claims



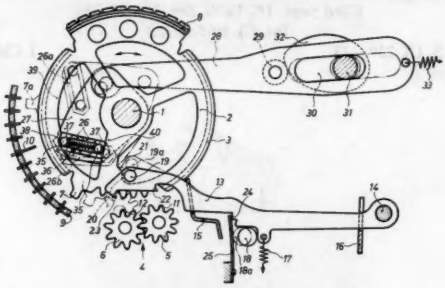
A flat-bottom plastic bag produced from an extruded length of gusseted thermoplastic material which can be snapped open, as is customary in bagging operations, will have self-sustaining walls, and will remain erect, resting upon its flat bottom, during the filling operation.

3,669,348

APPARATUS FOR SENSING DIGITAL INFORMATION

Paul Thevis, Oberndorf; Adolf Schneider, Altoberndorf, and Horst Jakubaschk, Oberndorf, all of Germany, assignors to Olympia Werke A.G., Wilhelmshaven, Germany

Filed May 3, 1971, Ser. No. 139,536
Claims priority, application Germany, May 22, 1970, P 20 24 928.9
Int. Cl. G06c 23/00, 15/26
U.S. Cl. 235—60 R 12 Claims

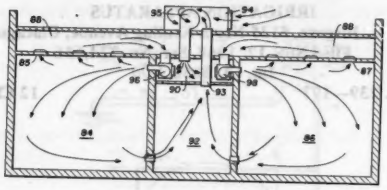


The ordinal series of the pins of a pin carriage are sensed by ordinal sensing wheels which are advanced and returned by a common reciprocating drive bar carrying a connecting spring for each sensing wheel. The first end of the connecting spring abuts a step of a rim portion and the second end abuts a spoke portion of the same sensing wheel in the zero position. The set pin stops the sensing wheel during advance movement in the corresponding digital position, so that the first end of the connecting spring passes this step while the drive bar moves on with the other connecting springs to sense the set pins of the other orders. During the return of the sensing wheels, the second ends of the connecting springs act successively on the respective spoke portions to return all sensing wheels to the zero position.

3,669,349
AIR FLOW CONTROL SYSTEM

William K. Hall, Jr., 1221 Frito-Lay Tower, Dallas, Tex.

Continuation-in-part of application Ser. No. 577,298, Sept. 6, 1966, now abandoned. This application May 8, 1967, Ser. No. 636,748
Int. Cl. G05d 11/16; F24f 13/04
U.S. Cl. 236—13 10 Claims

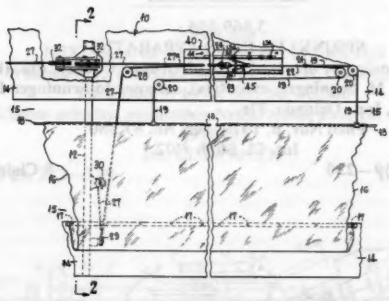


Environmental temperatures are controlled by selectively proportioning air flow from a pair of air flow paths by generation of a force proportional to temperature and dependent solely upon temperature for oppositely and proportionally changing registration of small openings in pairs of perforated plates laterally disposed in the air flow paths.

3,669,350
AUTOMATIC TEMPERATURE CONTROL APPARATUS FOR POULTRY HOUSES AND THE LIKE

Billy C. White, 511 West Sypert Street, Nashville, Ark.

Filed Dec. 11, 1970, Ser. No. 97,111
Int. Cl. F24f 11/02
U.S. Cl. 236—49 6 Claims



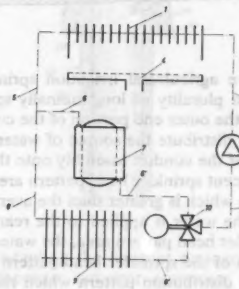
Temperature control apparatus for a building having a ventilation opening therein over which a closure is movable in opposite directions to vary the opening size and wherein a series of temperature ranges of a multi-stage thermostat correspond respectively to stationary positions of the closure. When the temperature in the building rises or falls beyond any of the ranges, the direction of closure movement is electromagnetically selected, followed by movement of the closure toward and adjacent stationary position corresponding to the next temperature range.

The invention is characterized by the provision of a limit switch individual to each directional movement in each temperature range, and a trolley-type switching hog roller movable with the closure and adapted to travel back and forth across these switches. During this travel, the switch corresponding to the next stationary position the curtain is to occupy will be actuated to arrest the closure in the latter position.

3,669,351
CIRCULATION WATER HEATER WITH DOMESTIC HOT WATER SUPPLY

Hans Meier, Remscheid, and Frithjof Carouge, Solingen, both of Germany, assignors to Joh. Vaillant KG, Remscheid, Germany

Filed Aug. 7, 1970, Ser. No. 62,054
Claims priority, application Austria, Sept. 9, 1969, 8891/69
Int. Cl. F24d 3/08
U.S. Cl. 237—19 1 Claim

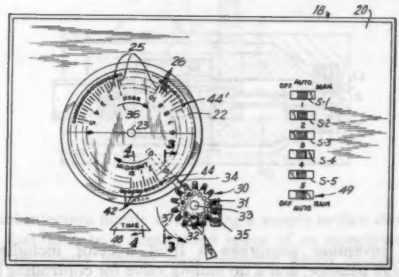


A feed line leads from a water heater to a radiator and to a heat exchanger for domestic water. A return line has branches from both the radiator and the heat exchanger to a valve which communicates with the return trunk to the water heater.

3,669,352
AUTOMATIC SPRINKLER SYSTEM

Peter C. Zaphiris, 73 Mall Drive, Commack, L. I., N.Y.

Filed Oct. 19, 1970, Ser. No. 82,014
Int. Cl. A01g 27/00
U.S. Cl. 239—70 9 Claims



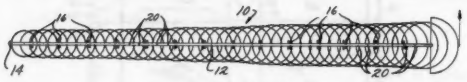
A system for controlling the operation of a plurality of sprinklers distributed over an area to be irrigated includes a timer clock wheel mounting a plurality of indexer clips which successively actuate a photoelectric switch located below the clock wheel. The photoelectric switch controls the on-off operation of the variously located sprinklers in succession in accordance with the time positions of the indexer clips.

3,669,353

PIVOT MOVE AGRICULTURAL IRRIGATION SYSTEM WITH IMPROVED WATER DISTRIBUTION AND SPRINKLER HEAD UTILIZED THEREWITH

Richard E. Hanson, Peoria, Ill., and Raymond F. Lippitt, Bethesda, Md., assignors to L. R. Nelson Mfg. Co., Inc., Peoria, Ill.

Filed July 21, 1970, Ser. No. 56,809
Int. Cl. B05b 3/12
U.S. Cl. 239—177 3 Claims



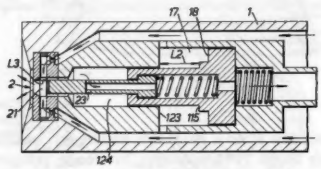
A pivot move agricultural irrigation sprinkler system in which at least a plurality of longitudinally spaced sprinkler heads adjacent the outer end portion of the conduit assembly are arranged to distribute the source of water within the adjacent portion of the conduit assembly onto the forward portion of the adjacent sprinkler head pattern area at an average application rate which is greater than the average application rate at which the water is applied to the rear portion of the adjacent sprinkler head pattern area, the water applied to the forward portion of the sprinkler head pattern area being distributed with a distribution pattern which rises rapidly to a maximum adjacent the leading portion of the sprinkler head pattern area and a sprinkler head for use in such a pivot move system embodying a stream diffusing member mounted for movement into and out of the path of water flowing from the outlet during each cycle of operation and a mechanism for effecting repeated cycles of operation which include step-by-step incremental rotational movement in an operative direction and rotational movement in a reverse direction, one cycle including an operative movement of an arcuate extent greater than 360° but less than 720° and a reverse movement of an arcuate extent equal to the operative movement less 360°.

3,669,354

FLUID INJECTORS

Lawrence Edward Helyer, Ascot, England, assignor to J&T Engineers (Ascot) Limited

Filed Sept. 8, 1970, Ser. No. 70,226
Int. Cl. B05b 9/00
U.S. Cl. 239—126 16 Claims



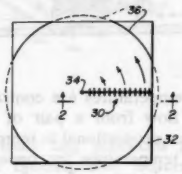
The invention comprises a fluid injector including a discharge passage, and a tip sealing valve for controlling fluid discharge through said passage, said tip sealing valve being responsive to a fluid differential operative thereon in a non-discharge condition of the fluid injector to close said discharge passage, said tip sealing valve being responsive to another fluid differential operative thereon in a discharge condition of said fluid injector to permit fluid discharge through said discharge passage, said tip sealing valve comprising first and second relatively movable parts with a spring means interposed between said parts, said first part having a cross-sectional area effective to the pressure of fluid flowing in said fluid injector in the non-discharge condition thereof such that said first part will be seated in closure relationship with said discharge passage, and said second part being responsive to the pressure of said fluid in said fluid flow to compress said spring means against said seated first part, by which the force with which said first part is seated is a function of said fluid pressure effective cross-sectional area of said first part and the rating of said spring means.

3,669,355

IRRIGATION APPARATUS

Adolph C. Jurgens, 5135 North Keating Avenue, Chicago, Ill.

Filed Nov. 12, 1968, Ser. No. 774,656
Int. Cl. B05b 3/00
U.S. Cl. 239—177 12 Claims



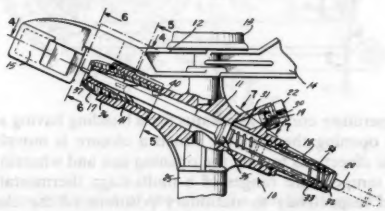
Irrigation apparatus including a water supply pipe supported by a plurality of carriages spaced therealong, the carriages having wheels spaced in the direction of movement and on opposite sides of the pipe, and vertically retractable and extendible in response to unevenness in the ground tending to support the pipe evenly, and cables supporting the pipe at a plurality of points between the carriages and from points on the carriages spaced transversely of and on opposite sides of the pipe.

3,669,356

SPRINKLER HEAD APPARATUS

Earl J. Senninger, deceased, late of Orange County, Fla. (by Annette M. Senninger, executrix), assignor to Senninger Irrigation, Inc., Orlando, Fla.

Filed Nov. 6, 1970, Ser. No. 87,380
Int. Cl. B05b 3/02
U.S. Cl. 239—230 8 Claims



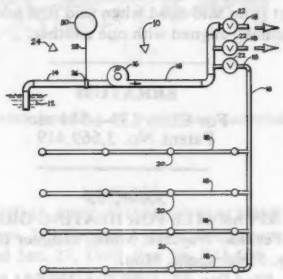
A step by step rotatable sprinkler head apparatus of the impulse arm type is provided having improvements in the impulse arm water engaging portion in which two separate curved surfaces are employed, one for repelling the impulse arm and the other for providing a better distribution of water. The sprinkler head also has a new nozzle with removable inserts for changing the wear surface without replacing the complete nozzle portion of the sprinkler head. Improved internal water vanes and rear spreader nozzle having internal angular vanes are also provided.

3,669,357

INJECTION AND DISTRIBUTION UNIT FOR A LAWN SPRINKLER SYSTEM

Charles A. Overbey, 16 Bougainvillea Drive, Cocoa Beach, Fla.

Filed Aug. 19, 1970, Ser. No. 65,143
Int. Cl. A62c 5/02; B05b 7/26
U.S. Cl. 239—310 7 Claims



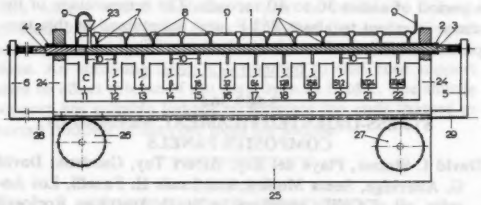
An injection and distribution unit for a lawn sprinkler system. The unit, which includes a reservoir, transfer tube and connector, injects liquid fertilizers and pesticides into the lawn sprinkler system. The fertilizer or pesticide is injected upstream of the pump and is mixed with water passing through the sprinkler system and distributed to the lawn or to nursery stock. The injection and distribution unit does not materially reduce flow through the system and is easily connected to existing pump suction pipes made of galvanized iron, polyvinal chloride (PVC), polyethylene and other materials.

3,669,358

MIXING AND DISPENSING APPARATUS

Jan Waldman, 13 Raadhuisplein, Zandvoort, Netherlands

Filed Dec. 9, 1970, Ser. No. 96,360
Claims priority, application Netherlands, Dec. 10, 1969, 6918495
Int. Cl. B67d 5/56
U.S. Cl. 222—129 14 Claims



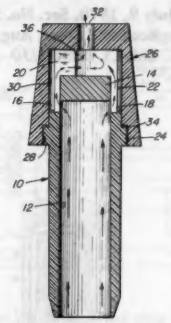
A mixing and dispensing apparatus comprises at least one horizontal main cylinder having a row of inlet openings at its top and a row of outlet openings at its bottom. Two pistons are displaceable in the cylinder in such manner that they may either be independently displaced, or simultaneously displaced at a constant distance from each other. At the end of each displacement, only one opening is uncovered. For preparing a dilution series, a separate inlet opening is provided for the liquid to be diluted and the other inlet openings are connected with a feed line for the diluent.

3,669,359

AEROSOL MECHANICAL BREAK-UP NOZZLE INSERT

John Richard Focht, Yonkers, N.Y., assignor to Precision Valve Corporation, Yonkers, N.Y.

Filed Sept. 18, 1970, Ser. No. 73,537
Int. Cl. B05b 1/34
U.S. Cl. 239—491 3 Claims



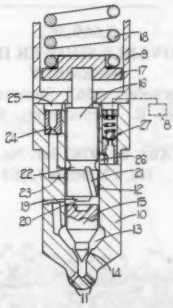
An insert for adapting the product passage of a conventional aerosol dispenser actuator comprises a hollow pin member and an overfitting cap member which together form a swirl chamber and feed passages for mechanical nebulization purposes.

3,669,360

FUEL INJECTION NOZZLES

Basil Edward Knight, Pinner, England, assignor to C.A.V. Limited, Birmingham, England

Filed July 7, 1970, Ser. No. 52,908
Claims priority, application Great Britain, July 7, 1969, 34,132/69
Int. Cl. B05b 1/30
U.S. Cl. 239—533 15 Claims



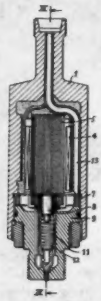
A fuel injection nozzle comprising a supply orifice through which fuel flows to a combustion space of an associated engine a resiliently loaded valve member which co-operates with a seating to prevent the flow of fuel through the supply orifice until the pressure of fuel applied to the valve member from an inlet attains a sufficiently high value, the mechanical connection between the valve member and the resilient means which loads the valve member being divided to define a variable volume chamber. Fuel is supplied to the chamber from the inlet and means is provided to limit the maximum volume of the chamber the arrangement being that fuel flowing through the inlet initially flows at a restricted rate through the supply orifice and when said chamber has attained its maximum volume the valve member is lifted to

allow substantially unrestricted flow through the supply orifice.

3,669,361
ELECTROMAGNETIC FUEL INJECTORS FOR INTERNAL COMBUSTION ENGINES

Herve Gueret, Versailles, France, assignor to Societe des Procedes Modernes d'Injection Sopromi, Les Mureaux, France

Filed July 9, 1970, Ser. No. 53,340
Claims priority, application France, Aug. 1, 1969, 6926491
Int. Cl. B05b *1/30*
U.S. Cl. 239—585 **8 Claims**

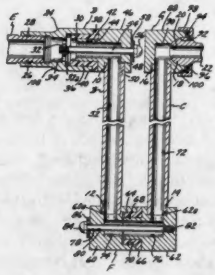


An electromagnetically controlled injector for internal combustion engines adapted to cut out the effects on uniformity of feed of all parasitic phenomena such as the rebounds of the needle and modifications in the pressure prevailing in the feed pipes. To this end, the liquid fuel is protected against the formation of waves by a throttling of the incoming liquid in a channel extending laterally of the stationary armature or else axially through the latter directly into the needle. Thus it is possible to obtain for the curve of injected fuel amounts vs. time a straight line between the desired minimum and maximum amount values.

3,669,362
ADJUSTABLY MOVABLE SHOWER HEAD SUPPORTING ASSEMBLY

Leonard G. Meyerhofer, 1567 Stoneman Place, Anaheim, Calif., and Carl E. Meyerhofer, 9772 Lullaby Lane, Anaheim, Calif.

Filed Aug. 6, 1970, Ser. No. 61,652
Int. Cl. B05b *15/08*
U.S. Cl. 239—587 **4 Claims**



An adjustably movable water conducting assembly for use with a fixed water outlet and a shower head to dispose said head at a desired position. The assembly includes first and second laterally spaced parallel rigid tubes, first and second rotatable water conducting means, and a ball and socket water conducting shower head support. The first rotatable means is connected to said outlet and a first end of said first tube, with said second means being connected to second ends of said first and second tubes, and said ball and socket water conducting shower head support mounted on a second end of said first tube. Said water conducting assembly permits the shower head associated therewith to be adjustably disposed at any desired position within an imaginary circle that has a radius that is the distance between the center of rotation of said first water conducting means and the center of the outlet from said head when said first and second tubes are longitudinally aligned with one another.

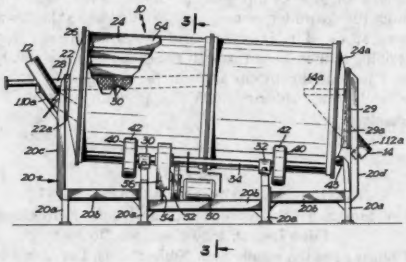
ERRATUM

For Class 239—544 see:
Patent No. 3,669,419

3,669,363
APPARATUS FOR HEATING GRAIN

Joseph M. Peebles, Wayzata, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

Filed Dec. 15, 1969, Ser. No. 884,925
Int. Cl. B02b *1/08*
U.S. Cl. 241—8 **3 Claims**



Grain such as wheat is heated to improve the yield of high-grade flour by elevating the wheat and allowing it to fall repeatedly through a steam-filled vessel thereby providing intimate contact between the steam and the individual grains for a period of about 30 to 40 seconds. The temperature of the wheat is raised to about 85° F. and maintained at this temperature for about 2 to 4 hours before milling.

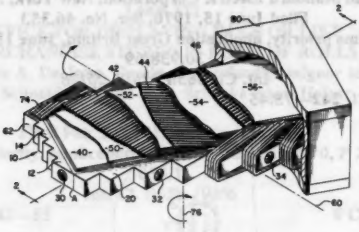
3,669,364
STRESS-ORIENTED FILAMENT WINDING IN COMPOSITE PANELS

David I. Sinizer, Playa del Rey; Albert Toy, Gardena; David G. Atteridge, Santa Monica, and Louis H. Fanelli, Los Angeles, all of Calif., assignors to North American Rockwell Corporation

Division of Ser. No. 646,582, June 16, 1967, Pat. No. 3,537,170
Filed Feb. 9, 1970, Ser. No. 14,701
Int. Cl. B65h *75/06*
U.S. Cl. 242—1 **5 Claims**

Removable terraced peripheral edges on a rotating mandrel are adapted to receive successive windings of thin filament in a plurality of separate layers to form reinforced composite panels. The mandrel edges are reversed in position between each winding step to permit winding of filaments at stress-oriented cross-ply angles with a minimum of filament

wastage, after which the workpiece components are diffusion bonded together. Rare earth oxides are used in stop-off



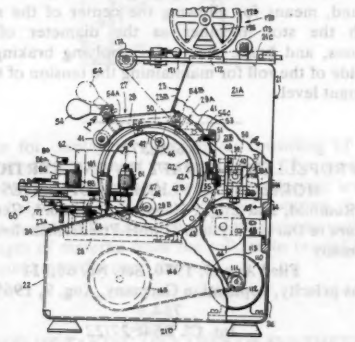
coatings to prevent bonding of workpiece materials to mandrel surfaces.

3,669,365

TOROIDAL COIL WINDING MACHINE

Joseph A. Loturco, 102 Central Avenue, Bridgeport, Conn.

Filed Jan. 27, 1969, Ser. No. 841,638
Int. Cl. H01f *41/08*
U.S. Cl. 242—4 B **18 Claims**



Machine for winding wire onto a toroidal core by rotating a wire carrying shuttle interlinked with said core. A drive motor rotates the shuttle in a transmission terminating in peripheral shuttle driving and supporting roller means. The motor also drives through a variable speed transmission to a core holder which includes a pair of resiliently biased, pivoted arms with drive roller journalled thereon to support and index said core in timed relation with the shuttle rotations. An actuating lever is connected to said core support arms to effect release of the core from its holder. The shuttle support has suitable linkage to separate the ends thereof to permit removal of the core from the shuttle.

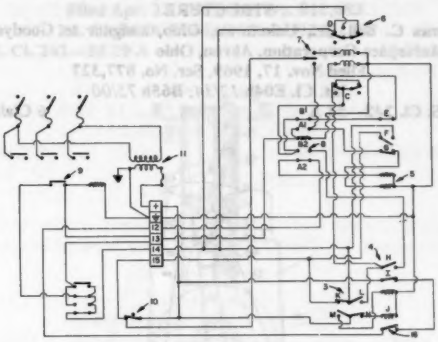
3,669,366

ELECTRO-BUNCH ATTACHMENT

Marvin N. Trotter, Anderson, S.C., assignor to J. P. Stevens & Co., Inc., New York, N.Y.

Filed Jan. 25, 1971, Ser. No. 109,353
Int. Cl. B65h *54/36*; D01h *1/38*
U.S. Cl. 242—26.41 **4 Claims**

Prevention of winding bad bunches on bobbins in a manually doffed spinning frame when the traverse chain or mechanism is incompletely rewound is effected by a double switch actuated by a projection or cam on a spinning frame ring rail. When the traverse chain is completely rewound, the ring rail can rise only sufficient to maintain a switch closed but not sufficient to rock the switch to a position where it opens and closes a second switch. In this case a latching relay is actuated by a timing delay circuit closed and the spinning cycle continues. If the traverse chain has not been complete-



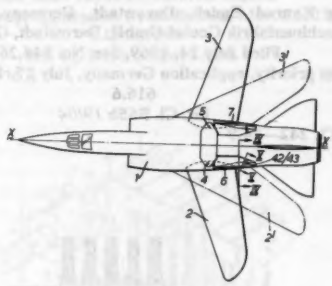
ly rewound at the start of winding the ring rail rises to a position where the second of the above switches is closed before the latching relay, and this results in stopping the spinning frame, which can only be started by manual reset.

3,669,367

AEROPLANES HAVING VARIABLE SWEEP WINGS

Arthur Neville Rhodes, and Denis Edward Blackburn, both of Preston, England, assignors to British Aircraft Corporation Limited, London, England

Filed Feb. 13, 1970, Ser. No. 11,278
Claims priority, application Great Britain, Feb. 14, 1969, 8,301/69
Int. Cl. B64c *3/40*
U.S. Cl. 244—46 **8 Claims**



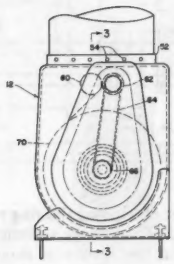
An aircraft having variable-sweepback wings accommodated in longitudinal slots formed in the sides of the aircraft fuselage, each slot being provided with sets of upper and lower doors which are located above and below the wing and co-act with the wing to keep the gaps between the wing surfaces and the upper and lower edges of the slot substantially closed in all sweepback positions. The upper and lower door sets are spring-biassed towards one another by means of a mechanism comprising a pair of arms pivoted at a common pivot point and inter-connected by a biassing spring, their outer ends being connected respectively to the upper and lower door sets. The arrangement is that as the sweep-back angle is increased, the wing wedges the upper and lower doors apart against the bias; and when the wing deflects vertically, it moves one door set vertically with it and the reac-

tion of the biasing spring causes the other door set to follow by moving simultaneously in the same sense.

3,669,368
MECHANICALLY OPERATED ERECTABLE STRUCTURE

James C. Bell, Jr., Uniontown, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Nov. 17, 1969, Ser. No. 877,327
Int. Cl. E04h *12/34*; B65h *75/00*
U.S. Cl. 242—54 A **6 Claims**

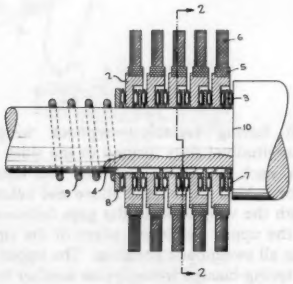


The invention relates generally to extensible and retractable structure and more particularly to such a structure which may be used as a rigid support for loads applied axially thereof and/or laterally therealong, and where no fluid pressurization is required, but that stability is attained by the mechanical interrelation of the structure itself. Essentially, the bands of flexible curved metal are slidably interrelated and bent back on themselves to achieve the structural concept.

3,669,369
WINDING SHAFT

Georg Konrad Emich, Darmstadt, Germany, assignor to Maschinenfabrik Goebel GmbH, Darmstadt, Germany

Filed July 24, 1969, Ser. No. 844,267
Claims priority, application Germany, July 27, 1968, P 17 74 616.6
Int. Cl. B65h *19/04*
U.S. Cl. 242—56.9 **2 Claims**

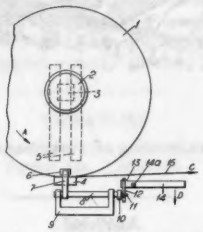


Winding shaft with a plurality of lap creels and bushings or disks driven by a revolving shaft with anti-friction bearings in the form of needle bearings interposed between the lap creels and the bushings or disks.

3,669,370
TAPE TENSION CONTROL APPARATUS

Peter Arthur Mason, London, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed June 15, 1970, Ser. No. 46,353
Claims priority, application Great Britain, June 18, 1969, 30,938/69
Int. Cl. B65h *23/08*, *25/28*
U.S. Cl. 242—75.45 **8 Claims**

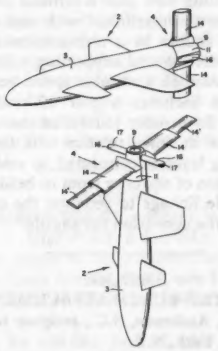


An apparatus for controlling the tension and acceleration of a strip being unwound from a spirally wound roll includes means for rotatably mounting the roll about its center, a stop member disposed against a peripherial portion of the circumference of the roll for establishing tension in the strip being unwound, means for allowing the center of the roll to approach the stop member as the diameter of the roll decreases, and brake means for applying braking force to each side of the roll for maintaining the tension of the strip at a constant level.

3,669,371
JET-PROPELLED AIRCRAFT HAVING VERTICAL AND HORIZONTAL FLIGHT PROPERTIES

Peter Romhild, and Eugen Herpfer, Markdorf, Germany, assignors to Dornier System GmbH Friedrichshafen, Bodense, Germany

Filed Aug. 3, 1970, Ser. No. 60,511
Claims priority, application Germany, Aug. 9, 1969, P 19 40 754.6
Int. Cl. B64c *27/22*
U.S. Cl. 244—7 A **4 Claims**



This invention relates to a jet-propelled aircraft having both vertical and horizontal flight properties which comprises tail unit means mounted on a rotor head which means act as rotor blades during vertical flight, jet arm means mounted on the rotor head and having jet nozzles thereon, jet-deflecting means in the jet arms for conveying to the arms the rearwardly emerging gas jet serving for the forward thrust, and

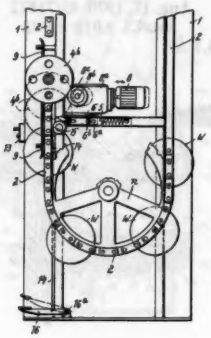
means for pivoting the jet arms into and out of an effective position.

3,669,372

DEVICE FOR DISPLAYING RUGS OR LIKE MERCHANDISE STORED IN FORM OF ROLLS

Bernulphus A. De Jong, Gouda, Netherlands, assignor to Joh. Friedr. Schneider, Vorst Post Schenke uber Halver, Germany

Filed Feb. 5, 1971, Ser. No. 112,889
Claims priority, application Germany, July 31, 1970, P 20 38 034.1
Int. Cl. B65h *19/06*
U.S. Cl. 242—55 9 Claims



A device for displaying merchandise consisting of sheet material convolutely wound to form a roll. The device includes means for raising such a roll to a desired level. It further includes motor driven means for rotating the roll after it has been positioned at the desired level to unwind a desired length of material from the roll, or to rewind previously unwound material upon the roll.

3,669,373

METHOD OF TAKING UP YARNS OF SYNTHETIC FIBERS

Kikuo Hori, and Yoshito Sato, both of Matsuyama, Japan, assignors to Teijin Ltd., Osaka, Japan

Continuation-in-part of application Ser. No. 726,156, May 2, 1968, now abandoned. This application July 6, 1970, Ser. No. 52,255
Claims priority, application Japan, May 9, 1967, 42/29364
Int. Cl. B65h *54/34, 54/00*
U.S. Cl. 242—18 EW 4 Claims

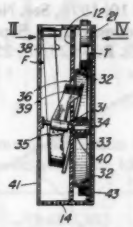
A method of taking up waste yarns of non-uniform quality occurring at the start and stoppage of taking up yarns onto waste yarn take-up members situated below, and coaxially with, take-up bobbins in a yarn take-up apparatus having many spindles, characterized in that the waste yarns are traversed on the said members.

3,669,374

COMBINED ENDLESS LOOP FILM AND ENDLESS LOOP MAGNETIC TAPE CARTRIDGE

Paul Catalano, Manhasset, and John Bickel, Ossining, both of N.Y., assignors to Retention Communication Systems, Inc., New York, N.Y.

Filed Apr. 23, 1969, Ser. No. 818,683
Int. Cl. B65h *17/48*; G03b *23/02, 21/00*
U.S. Cl. 242—55.19 A 10 Claims



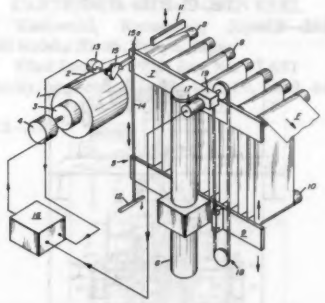
A pair of reels holding endless loops of film, and magnetic recording tape, respectively, are nested wholly, or partly with one reel located within an unobstructed space beneath the rim of the other; when partly nested (FIGS. 2–4) the film reel rotates about an axis inclined with respect to the axis of tape reel, so that the film reel dips (through an opening in a central support) into the unobstructed space within the tape reel to enable the lower edge of film to clear the diametrically opposed upper edge of the reel. When wholly nested (FIGS. 1*a* and 1*b*), one reel (either film or tape) is nested completely within the other with co-planar axes of rotation, the film and tape being taken off and guided to projection and reproduction positions, respectively.

3,669,375

WEB OR STRIP MATERIAL HANDLING APPARATUS

John M. Bruton, North Harrow, Middlesex, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 12, 1970, Ser. No. 18,896
Claims priority, application Great Britain, Mar. 21, 1969, 14,938/69
Int. Cl. B65h *23/06, 51/20*
U.S. Cl. 242—75.4 4 Claims



Web material is processed through a magazine mechanism which stores a quantity of such web material, thereby to permit successive rolls of the web material to be spliced together without stopping the processing. The magazine comprises two relatively movable sections which come together gradually as web material is given up from the magazine during the splicing operation; and gradually part, after splicing is effected, thereby to refill the magazine. Means is disclosed

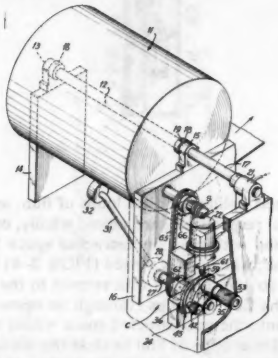
for assuring that the movement of the relatively movable magazine parts do not cause undulation or the like within the web material.

3,669,376

SYSTEM FOR CONTROLLING APPLICATION OF BRAKING FORCE TO A ROLL OF SHEET MATERIAL

Raymond L. R. Lucas, c/o Office Tech. 133 Bis Rue Mounyra, Prechac, France

Filed Aug. 10, 1970, Ser. No. 62,310
Claims priority, application France, Sept. 11, 1969, 6931050
Int. Cl. B65h *25/28, 25/22*
U.S. Cl. 242—75.45 **7 Claims**



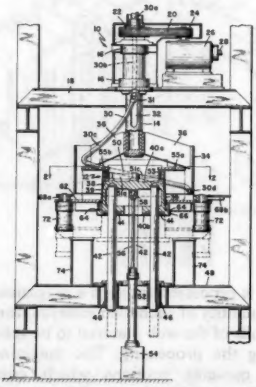
A system for controlling the application of braking force to a roll of sheet material in which a sensing member controlled by the diameter of the unwinding roll, moves a cam surface to actuate a control device that in turn controls the energization of a brake for such roll, the cam surface being adjustable to provide a braking force that may be varied from zero to a predetermined amount between the extreme ranges of the maximum and minimum roll diameters.

3,669,377

COILING APPARATUS

Martin Gilvar, Westboro; Charles E. Conlon, Worcester, and Alfred R. Leger, Leominster, all of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Filed Dec. 9, 1970, Ser. No. 96,516
Int. Cl. B21c *47/00*
U.S. Cl. 242—82 **8 Claims**



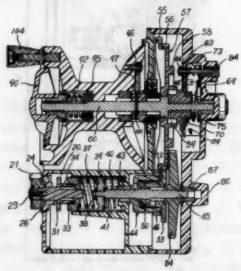
Apparatus and method for forming a coil by winding an axially advancing product length around a mandrel. The rotational speed of the winding means is initially adjusted relative to the axial speed of the product length to loosely encircle the mandrel with a relatively short leading section of the product. The leading section is then temporarily held against the mandrel and the speed of the winding means is increased while axially reciprocating the mandrel to produce an evenly distributed, closely packed and tightly wound coil. Upon completion of the coil forming operation, the mandrel is axially withdrawn from the coil, and the coil is discharged from the apparatus.

3,669,378

FISHING REEL WITH MANUAL OR MOTOR DRIVE

Toshiaki Miyamae, 292 Nishi-Iwata, Higashi-Osaka, Japan

Filed Oct. 2, 1970, Ser. No. 77,550
Claims priority, application Japan, Aug. 12, 1970, 45/80884; Aug. 17, 1970, 45/71922
Int. Cl. A01k *89/02*
U.S. Cl. 242—84.1 A **17 Claims**



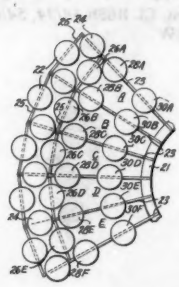
In a power driven fishing reel construction, a power unit includes a torque motor; a power transmission unit is adapted to be associated with a speed change actuating unit; the speed change actuating unit comprises a cylindrical cam means and an actuating plate interposed between spring members; the control of the reeling-in speed is effected by selective engagement of a pair of dog clutch means; and detachable spool means can be changed over to be independently operable either by disconnecting further clutch means out of engagement, or by displacing a speed change lever into neutral position.

3,669,379

YARN STAND

Morris Philip, 2519 Grand Avenue, Bronx, N.Y.

Filed May 18, 1970, Ser. No. 38,082
Int. Cl. B65h *49/02;* **D02h** *1/00;* **D03j** *5/08*
U.S. Cl. 242—131 **8 Claims**



A cylinder knitting machine yarn stand which has an outer ring of yarn holders, an inner ring of yarn holders, and one or more intermediate rings of yarn holders between the inner and outer rings. Spaced apart voids are provided in the stand between the inner and outer rings so that cones of yarn can be inserted from the underside of the stand onto the yarn

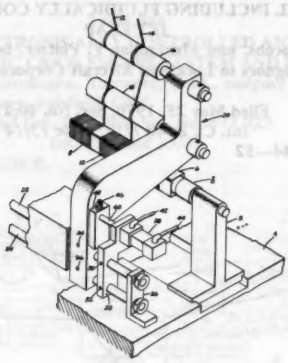
holders of at least the inner ring and the innermost of the intermediate rings.

3,669,380

APPARATUS FOR WINDING ELECTRICAL COILS

Saverio Caltagirone, Danville, Ill., assignor to General Electric Company

Filed Feb. 16, 1970, Ser. No. 11,455
Int. Cl. B65h *54/28*
U.S. Cl. 242—158 R 7 Claims



A multiple coil winding machine for winding a plurality of layer wound coils on a single insulating winding form common to all of the coils, with insulating sheets common to all of the coils inserted between layers of the coils. The wire payoff carriage transverses in an axial direction with respect to the winding arbor carrying the insulating winding form, to provide the desired number of turns in each layer of the coil. In presently available multiple coil winding machines the traversals of the wire payoff carriage is effected by a reciprocating drive mechanism including a cardioid cam drive having two null points, one occurring at each reversal in the direction of movement of the wire payoff carriage, and providing certain amount of dwell in movement of the wire payoff carriage at each reversal. A separate reversal mechanism acting between the wire payoff carriage and the reciprocating drive mechanism driving the wire payoff carriage provides an accelerated reversal at each reversal of the wire payoff carriage traverse.

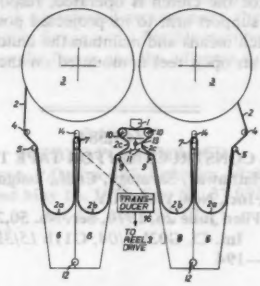
3,669,381

TAPE RECORDER REELING CONTROL DEVICE

Gunter-Karl Schmidt, Constance, Germany, assignor to LICENTIA Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany

Filed Dec. 21, 1970, Ser. No. 99,813
Claims priority, application Germany, Dec. 19, 1969, P 19 63 687.4
Int. Cl. G11b *15/58, 23/12*
U.S. Cl. 242—182 3 Claims

In a tape recorder tape reeling device including a plurality of buffer chambers each for containing a pneumatically drawn tape loop forming part of a buffering length of tape between a transducer head and a reel, a tape tension sensor supporting the tape between such loops and providing an indication of the pneumatic attraction forces applied to such loops and hence of the length of the loops in the chambers.

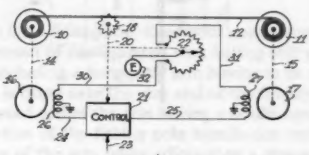


3,669,382

STRIP POSITIONING APPARATUS

Richard J. Struzina, Ottawa, Ontario, Canada, assignor to Computing Devices of Canada Limited, Ottawa, Ontario, Canada

Filed July 18, 1969, Ser. No. 843,108
Int. Cl. B65h *23/18, 25/22*; G03b *21/44*
U.S. Cl. 242—186 4 Claims



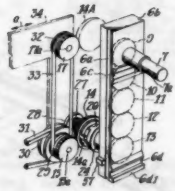
A strip positioning apparatus in which the strip is wound between two motor driven spools. A sensor provides a signal representing actual position to a control. A desired position signal is also applied to the control and a difference signal applied to control windings on the motors. Tension is maintained on the strip material by applying signals to the control windings in an opposite sense and the signals varied in accordance with the amount of strip material on each spool.

3,669,383

MOVIE PROJECTOR ADAPTED TO USE BOTH A FILM CARTRIDGE AND AN OPEN REEL

Tatsusuke Kadowaki, Kanagawa, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Dec. 14, 1970, Ser. No. 97,651
Claims priority, application Japan, Dec. 19, 1969, 44/102774
Int. Cl. G03b *23/02*
U.S. Cl. 242—192 5 Claims



A movie projector has a reel support arm mounted in its housing for movement between a retracted, film cartridge attaching position and a projected reel mounting position, and has a film feed spindle adjacent its outer end. A film stripper pawl and a film threader are cooperable with film in a cartridge attached to the support arm to feed the film automatically to a film gate, and are connected to a driving means by

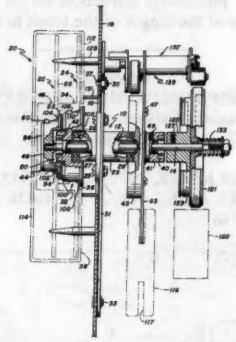
operating mechanism including a clutch. A control mechanism for the clutch is operated, responsive to movement of the support arm to its projected position, to disengage the clutch means and maintain the clutch means disengaged while an open reel is mounted on the projected reel support arm.

3,669,384

SPINDLE CONSTRUCTION FOR TAPE TRANSPORT

Richard A. Hathaway, Saratoga, Calif., assignor to Cartridge Television, Inc., New York, N.Y.

Filed June 26, 1970, Ser. No. 50,204
Int. Cl. G03b *1/04*; G11b *15/32*
U.S. Cl. 242—194 **44 Claims**



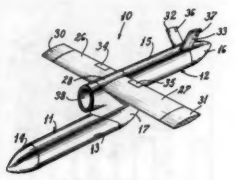
An improved spindle for mounting a tape reel of a tape cartridge for rotation wherein the spindle includes the shaft provided with a rotor for insertion into the hub of the tape reel. The rotor has detent means which cooperate with inner peripheral teeth on the reel hub to couple the reel to the spindle rotor for rotation about the axis of the spindle shaft. The invention is especially adapted for use with a reel-over-reel cartridge wherein a pair of co-axial spindles are adapted to be connected with the two reels of the cartridge.

3,669,385

AIRCRAFT OF IMPROVED AND SIMPLIFIED CONSTRUCTION

Earl Glantz, Baldwin, and Jean W. McComas, Islip, both of N.Y., assignors to Fairchild Industries, Inc., Montgomery County, Md.

Filed Oct. 8, 1970, Ser. No. 79,197
Int. Cl. B64c *1/26*
U.S. Cl. 244—13 **15 Claims**



An aircraft of improved of simplified construction having forward and aft generally cylindrical and substantially identical fuselage sections that are connected to a central fuselage section that houses an engine that has an inlet located above the forward fuselage section for powering the aircraft in flight. The central long axis of the aft fuselage section is located above the central long axis of the forward fuselage section. Wings are connected to the central fuselage section and a tail assembly is connected to the aft portion of the aft fuselage section. Many of the component parts of the aircraft are interchangeable and the aircraft is especially suited for use as a drone for towing aerial targets.

ERRATUM

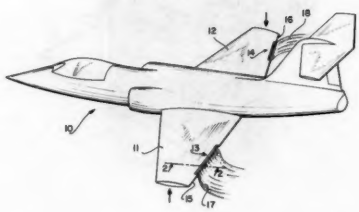
For Class 244—46 see:
Patent No. 3,669,367

3,669,386

AIRFOIL INCLUDING FLUIDICALLY CONTROLLED JET FLAP

Willi F. Jacobs, and Maximilian F. Platzer, both of Atlanta, Ga., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed May 25, 1970, Ser. No. 40,270
Int. Cl. B64b *1/36*; B64c *15/14*
U.S. Cl. 244—52 **8 Claims**



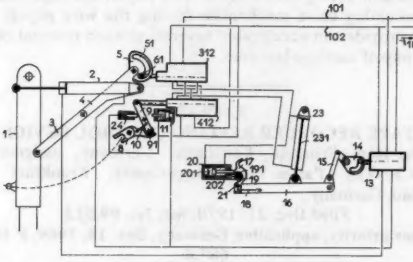
Controlled deflection of a jet flap emanating from an airfoil is accomplished by control fluid streams aligned at a substantial angle to the fluid jet which produces the jet flap. Disclosed embodiments show the use of the fluidically controlled jet flap to adjust the attitude and/or airfoil loading of an aircraft, to generate oscillatory lift forces for flight flutter testing of an aircraft, and to generate and control gusts in wind tunnels.

3,669,387

CONTROL DEVICE FOR AIRCRAFT UNDERCARRIAGES AND TRAP-DOOR HOUSING CLOSURE

Rene Lucien, Neuilly S/Seine, France, assignor to Societe Messier, Paris, France

Filed June 29, 1970, Ser. No. 50,495
Claims priority, application France, June 27, 1969, 6921852
Int. Cl. B64c *25/16*
U.S. Cl. 244—102 SL **7 Claims**



A control device for a retractable aircraft undercarriage and for the trap-door closing its housing, with their actuating and locking members and control members supplying them in mechano-hydraulic sequences from a general undercar-

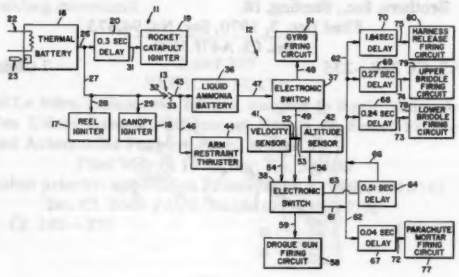
riage-lifting conduit and a general undercarriage-lowering conduit jack serves for actuating the trap-door, and a first slide-valve distributor and a second slide-valve distributor cooperate in supplying the jack. A first kinematic coupling is controlled by the retracted position of the undercarriage and places the first slide-valve in a characteristic undercarriage-up position and in a non-characteristic position. A second kinematic coupling is controlled by the down position of the undercarriage and places the second slide-valve in a characteristic position. A mechano-hydraulic means connects, in the non-characteristic positions, the opening chamber of the trap-door jack to the high-pressure supply, with hydraulic locking, and the closure chamber to the low-pressure supply.

3,669,388

ELECTRONICALLY CONTROLLED AND PYROTECHNIC CREW ESCAPE SYSTEM AND METHOD

Rudolf Van Kreuningen, Torrance, Calif., assignor to Explosive Technology, Fairfield, Calif.

Filed Oct. 29, 1969, Ser. No. 872,023
Int. Cl. B64d *25/00*
U.S. Cl. 244—138 R **8 Claims**



Pyrotechnic crew escape system having electronic switches and time delays for sequencing the firing of pyrotechnic devices in the ejection and recovery of a crew member from an aircraft.

ERRATUM

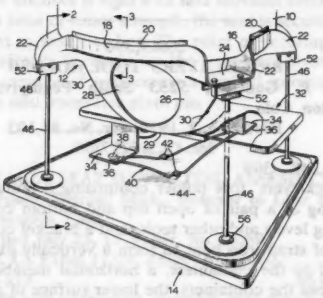
For Class 244—7 A see:
Patent No. 3,669,371

3,669,389

TUB WASHING MACHINE SUPPORT STRUCTURE

Kazuhiro Goto, London, Ontario, Canada, assignor to GSW Limited-GSW Limitee

Filed July 28, 1970, Ser. No. 58,905
Int. Cl. F16j *15/02*
U.S. Cl. 248—22 **4 Claims**



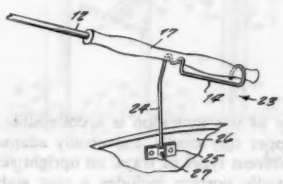
An upright tub of a washing machine is supported above a base on a plate which in turn is supported by flexible rods attached to the plate and the base, with the corresponding one end of the rods rigidly secured and the other end located in resilient means; in a preferred arrangement, the plate has an upwardly extending flange and a flexible member is bearingly inserted between the flange and the adjacent side wall of the tub.

3,669,390

FISHING POLE HOLDER

Caldon M. Nielson, P.O. Box 481, Ephraim, Utah

Filed May 14, 1970, Ser. No. 37,093
Int. Cl. A01h *97/10*
U.S. Cl. 248—42 **3 Claims**



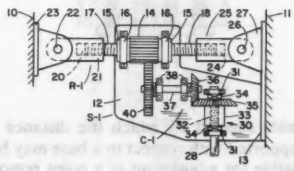
A support for a fishing rod, the device comprising a unitary structure formed of configurated wire having stiff properties, the device including a horizontal arm having at its rear end a hook which is fitted over the rear end of the fishing pole handle, the forward end of the arm having a cradle upon which a forward portion of the fishing pole handle can rest, the forward portion of the arm being adjacent to a downwardly extending leg the lower end of the leg having means for being inserted either into the ground or support or else being fitted into a bracket mounted upon a boat, thus comprising a means for supporting a fishing pole.

3,669,391

MECHANICAL SHOCK AND SWAY ARRESTOR

Leonard S. Suozzo, 366 Maple Hill Drive, Hackensack, N.J.

Filed Oct. 14, 1970, Ser. No. 80,659
Int. Cl. F16l *3/16*
U.S. Cl. 248—54 R **11 Claims**



A mechanical arrestor for protecting equipment, such as high temperature piping, vessels or the like, against shock loading or undesirable vibratory movement while permitting requisite movement of the equipment due to normal changes in the temperature or thermal movement of the equipment. The arrestor is comprised of a rigid strut unit, which is adjustable in effective length and is anchored at one end to a stationary structure and at its other end to the equipment, and a control unit which is coupled to and automatically adjusts the effective length of the strut unit in response to said changes in temperature or thermal movement of the equipment.

3,669,392

COLLAPSIBLE STAND-UP TRAY HOLDER

William C. Saunders, 4402 Daffodil Circle North, Palm Beach Gardens, Fla.

Filed Sept. 10, 1969, Ser. No. 856,534
Int. Cl. A47g 29/00
U.S. Cl. 248—121 4 Claims

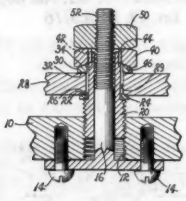
The device of this invention is a collapsible, tray holder having an upper tray cradle, universally adapted to hold a variety of different types of trays, an upright support, and a base. The cradle portion includes a rear stabilizer and a spring loaded front clasp designed to receive and hold trays of different sizes and shapes. The base and the cradle are connected to the upright with locking hinge connections forming, when assembled, a substantially C-shaped support. The tray cradle may be unlocked and folded at the hinge connections, parallel to the upright, with or without a tray therein. The base connection may also be unlocked for pivotal movement to collapse the holder to an I-shaped configuration for shipment or storage.

3,669,393

ADJUSTABLE SUPPORT

Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Thomas W. Andrews, 2029 North Grand Oaks, Altadena, Calif.

Filed July 31, 1970, Ser. No. 59,968
Int. Cl. F16m 13/02
U.S. Cl. 248—188.4 2 Claims



An adjustable support by which the distance at which a member is supported with respect to a base may be altered, is readily accessible for adjustment at a point remote from the supported member with respect to the base, and includes a junction with the supported member which is capable of limited universal movement to accommodate misalignment of the supported member with respect to the base.

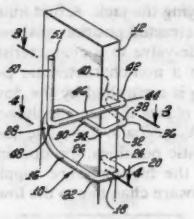
3,669,394

SNAP-ON BRACKET

Wynn R. Loucks, 11224 East Lambert, El Monte, Calif.

Filed July 8, 1970, Ser. No. 53,171
Int. Cl. F16m 13/02
U.S. Cl. 248—221 4 Claims

A snap-on bracket of unitary resilient construction adapted to be releasably positioned on a support structure. The bracket includes at least three spaced apart areas of gripping contact with said support structure wherein downward pressure on said snap-on bracket will enhance the binding relationship between said bracket and said support structure.

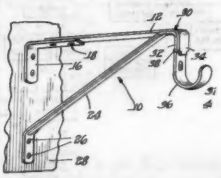


3,669,395

SHELF AND POLE BRACKET

Howard G. Gehrke, Rock Falls, Ill., assignor to Lawrence Brothers, Inc., Sterling, Ill.

Filed Dec. 3, 1970, Ser. No. 94,673
Int. Cl. A47f 5/00
U.S. Cl. 248—235 7 Claims



The present invention relates generally to a combined closet shelf and pole bracket, and more particularly to a novel and improved structural arrangement in which the elements comprising the bracket are readily attachable and detachable with respect to each other. The embodiment of the invention disclosed herein includes a horizontally disposed bracket member attachable at one extremity to a vertical work surface and formed at its opposite extremity with a first depending section. A second bracket member is in the form of a brace bar diagonally disposed with respect to the horizontal bracket member. The upper end of the brace bar engages the underside of the outer portion of the horizontal bracket member and is formed with a second depending section adapted to engage the inner surface of the first depending section, said section having an interlocking connection. A pole support forms an extension of the second depending section.

3,669,396

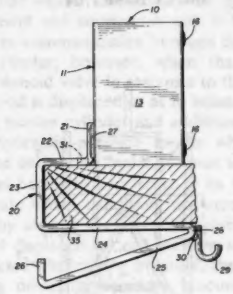
BRICKLAYERS' TOOL HOLDER

Charles P. Gantzler, 5253 South Pennsylvania Street, Littleton, Colo.

Filed Nov. 2, 1970, Ser. No. 86,103
Int. Cl. A47f 7/00
U.S. Cl. 248—309 1 Claim

A bricklayers' tool holder comprising a unitary structure consisting of a pair of open top and bottom containers for receiving levels and other tools, and a bracket consisting of a length of strap iron bent to form a vertically extending arm fastened to the containers, a horizontal member extending away from the containers, the lower surface of said member being in a plane with the bottom of the containers for bearing on the upper surface of a scaffold, a downwardly extending portion, a second horizontal member for contacting the

lower surface of a scaffold, and a downwardly inclined arm terminating in an upturned end which provides a hook for receiving the strap of a tool bag. The two horizontal members of the bracket together with the bottom edges of the containers form a clip for mounting the holder on a scaffold by sliding movement.

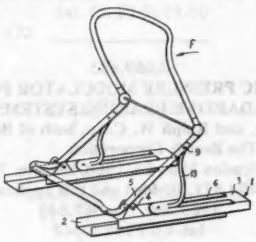


3,669,397

VEHICLE SEATS

Noel Le Mire, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt (Hauts de Seine) France and Automobiles Peugeot, Paris, France

Filed May 5, 1970, Ser. No. 34,830
Claims priority, application France, May 8, 1969, 6914745
Int. Cl. B60r *21/10*; B61l *1/00*; E01b *7/00*
U.S. Cl. 248—371 **1 Claim**



A seat for automotive vehicles of the like, rigid with a first section and movable in translation in relation to a second section secured to the floor of the vehicle. The first section carries at least one transverse pivot pin for the seat which lies substantially at the upper level of said movable section and is adapted to move parallel to itself in conjunction with said first section. A member is rigid with said movable section and formed with a zone of lesser strength, the seat is secured at at least one point to said member. The point of securing being shifted longitudinally in relation to the transverse pivot pin of the seat and capable of performing a limited movement of rotation about said transverse pivot pin.

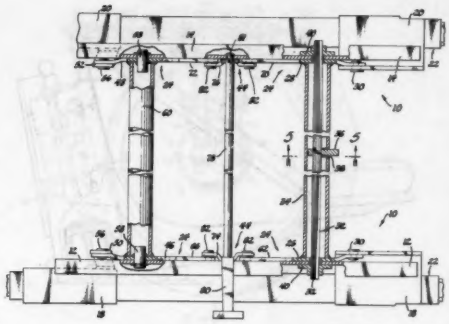
3,669,398

ADJUSTABLE SEAT SUPPORTING ASSEMBLY

David S. Robinson, Detroit, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed July 23, 1970, Ser. No. 57,692
Int. Cl. F16m *11/24*, *13/00*; B60n *1/02*
U.S. Cl. 248—373 **16 Claims**

An adjustable seat supporting assembly including a pair of spaced seat support members and base means. The seat support members are supported on the base means by elongated levers. Each lever is pivotally connected to the base means and independently pivotally connected to the seat support members. There are two sets of levers on each side of the assembly. The levers on each side of the assembly have ends facing one another with notches therein. Control links and latching plates are secured to the seat support members for selectively allowing the levers to pivot to adjust the vertical position of the seat support members. The improvement comprises the use of a torsion bar associated with the levers at the rear of the assembly. The torsion bar is twisted to react between the seat support members and the rear levers to urge the rear levers to pivot in a manner to raise the rear portion of the seat support members.

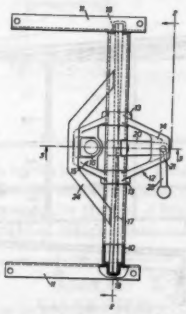


3,669,399

MECHANISM FOR THE TILTABLE SEAT OF A CHAIR

John Stewart Wager, Northampton, England, assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 5, 1970, Ser. No. 77,998
Claims priority, application Great Britain, Oct. 4, 1969, 48865/69
Int. Cl. A47c *3/023*
U.S. Cl. 248—373 **6 Claims**



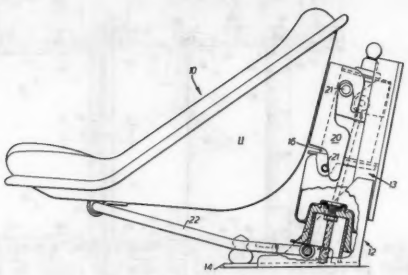
A pivot mechanism for a chair seat in which a torsion bar is fastened at its ends within a tube and to the underside of a seat. A support member fastens the tube for relative rotation about its own axis to a seat base. The tube has a transverse opening therein through which an arm rigidly attached to said torsion bar extends. The arm is positionable with respect to an abutment on the support member by means of a manually operable torque varying mechanism.

3,669,400

VEHICLE SEATS

Charles B. Lowe, Northampton, England, assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed July 24, 1970, Ser. No. 57,970
Int. Cl. F16m *13/00*
U.S. Cl. 248—400 11 Claims



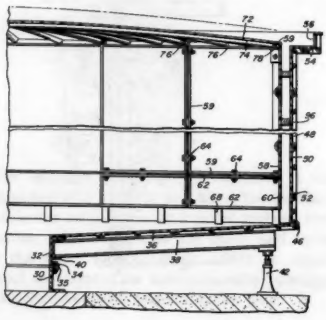
A vehicle seat having a seat part and a base part with a gas spring interposed therebetween. A source of compressed gas forms part of the vehicle seat and is fixed to the base part and connected to the gas spring. The seat frequently entails a pump to form the source of compressed gas. The pump preferably has a unique piston arrangement whereby an O-ring seals a piston to a cylinder in the pump during the compression stroke and allows gas passage past the piston during the recovery stroke.

3,669,401

FIBER GLASS REINFORCED MOLD FOR CEMENTITIOUS BUILDING

Ricardo J. Ocampo Nevarez, Mexico City, Mexico, assignor to Joseph Abelow, Miami Beach, Fla.

Filed Mar. 13, 1970, Ser. No. 19,429
Int. Cl. E04g *11/02*
U.S. Cl. 249—27 10 Claims



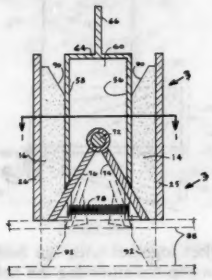
A mold form of plastic material for forming a building of cementitious material having structural features which enable its re-use and being constructed of fiber glass reinforced polyester resin with reinforcing elements incorporated therein to provide sufficient strength requirements to effectively form a concrete building.

3,669,402

MOLD FOR A HOLLOW BLOCK

Theodore C. Paulson, 2485 Hidden Valley Road, La Jolla, Calif.

Filed July 10, 1970, Ser. No. 53,905
Int. Cl. B28b *7/04*
U.S. Cl. 249—150 8 Claims



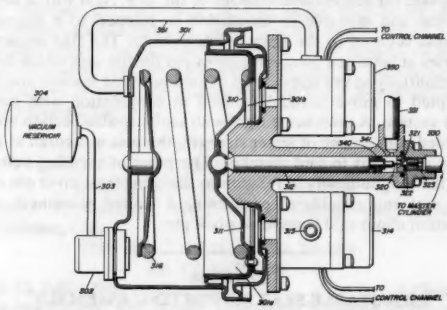
A mold for a hollow block such as one formed of concrete in which the mold includes a pair of outer side walls, end walls therefor and inner walls. Portions of the lower ends of the inner walls terminate above the lower ends of the outer side walls to form spaces. Pivotally mounted vanes extend downwardly and outwardly from between the inner walls and through the spaces, which vanes, together with a pallet, form the bottom of the mold. The vanes are yieldingly urged outwardly but yield inwardly when the pallet is lowered and pressure is applied to the top of the block, whereby the formed block can be removed through the bottom of the mold.

3,669,403

HYDRAULIC PRESSURE MODULATOR FOR USE IN ADAPTIVE BRAKING SYSTEMS

Michael Slavin, and Ralph W. Carp, both of Baltimore, Md., assignors to The Bendix Corporation

Original application Mar. 13, 1968, Ser. No. 712,672, now Patent No. 3,494,671. Divided and this application Oct. 20, 1969, Ser. No. 867,840
Int. Cl. F16k *31/42*
U.S. Cl. 251—30 6 Claims



A vacuum actuated hydraulic pressure modulator for use in an adaptive braking system for automobiles, trucks and the like, which is interposed in the vehicle hydraulic brake line between the master cylinder and the wheel cylinders to be controlled in response to error signals generated in an adaptive braking system control channel includes a diaphragm

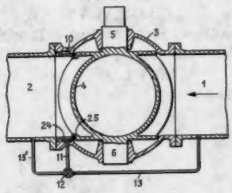
and a cooperating displacement rod within the modulator body which are positioned in accordance with the volumetric rate of air admitted to one side of the diaphragm by a solenoid valve which opens in response to an error signal generated by the adaptive braking system control channel when the vehicle wheels attain a certain dynamic condition. The displacement rod cooperates with a ball valve to normally allow free communication between the master cylinder and wheel cylinder; however, when the air is admitted through the solenoid valve in response to the error signal the displacement rod is displaced so as to isolate the wheel cylinders from the master cylinder and additionally to rapidly attenuate the hydraulic pressure at the wheel cylinders. In response to the decreasing brake pressure at the wheel cylinders, the wheel begins to accelerate to its vehicle speed. At another dynamic wheel condition, the error signal is extinguished thereby closing the solenoid valve. The modulated diaphragm and displacement rod are now repositioned so as to slowly increase the braking pressure, the rate of pressure increase being determined by the amount of air leakage across the modulator diaphragm. If wheel acceleration, in spite of the increasing brake pressure, increases to a third reference level, a modulator bypass valve is opened in response to a second control channel error signal so as to pneumatically shut the aforementioned diaphragm causing the displacement rod and diaphragm to be repositioned more rapidly, thus increasing the brake pressure at a more rapid rate, which rate is determined by the size of the bypass valve.

3,669,404

CLOSURE DEVICE ON A PIPE CONDUIT

Friedrich Kaiser, Mannedorf, Switzerland, assignor to Escher Wyss Limited, Zurich, Switzerland

Filed Mar. 19, 1970, Ser. No. 21,080
Claims priority, application Switzerland, Mar. 20, 1969, 4357/69; Apr. 15, 1969, 5788/69
Int. Cl. F16k *25/00*
U.S. Cl. 251—172 **1 Claim**



A rotary valve to be mounted in a pipe conduit and including an elastically yieldable packing cylinder fixed at one end by means of a short radial collar confined between the housing and a section of said conduit, and an annular sealing seat fixed to the rotatable ball member. The packing cylinder is arranged in a counterbore formed in the walls of said housing, and covers a space in said counterbore. The space, in the closed position of said closure member, being brought under liquid pressure so as to press the free end of said packing cylinder onto said seat.

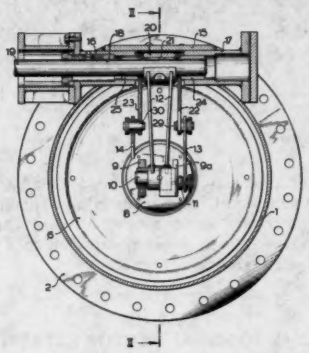
3,669,405

FLAP VALVE

Heinz Baum, Saarbrucken, Germany, assignor to Jansen Th. GmbH, Rohrbach, Germany

Filed Feb. 23, 1971, Ser. No. 117,941
Claims priority, application Germany, Feb. 23, 1970, P 20 08 359.4
Int. Cl. F16k *31/44*
U.S. Cl. 251—279 **6 Claims**

The specification describes a flap valve with a generally transversely extending flap arranged to be operated by a driving shaft lying outside the passage through which material flows through the valve. The shaft carries a lug fixed on it which extends into the passage and is pivotally connected with the flap near the center of the latter. Rocking of the shaft about its axis causes the flap to be moved towards and away from its seating. In order to ensure that the flap, after being moved clear of its seating, swings into a position perpendicular to its closed position in the passage, a linkage is provided. This linkage comprises two arms and two links. The arms are carried on the shaft and are normally stationary during operation. The links are connected with the arms and the flap. The angular setting of the arms, and hence of the flap can be changed by means of an adjustable stop mounted on the casing.

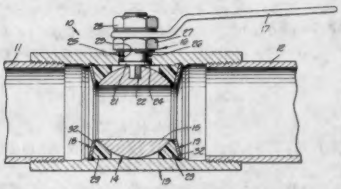


3,669,406

BALL VALVE

Howard V. Moore, Long Beach, Calif., assignor to Pacific Valves, Inc., Long Beach, Calif.

Filed Feb. 10, 1971, Ser. No. 114,195
Int. Cl. F16k *5/06*
U.S. Cl. 251—315 **9 Claims**



The rotary ball valve includes a generally annular seal which is held in place by an edge anchored annular retainer. The retainer is oversized for the valve housing and on installation resides in a state of compression.

3,669,407

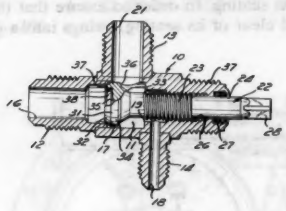
VALVE STEM

James E. Mundt, Mentor, Ohio, and Milan Powell, Angola, Ind., assignors to The Weatherhead Company

Original application Nov. 20, 1967, Ser. No. 684,285, now Patent No. 3,587,157. Divided and this application June 1, 1970, Ser. No. 54,060
Int. Cl. F16k *25/00, 29/00*
U.S. Cl. 251—334 **4 Claims**

A cold forged valve stem for a three-way valve includes a conical valving portion provided by a conical skirt of work hardened material. The skirt is radially deflectable to insure

proper seating and hardened to reduce wear. An oppositely facing conical valve seat is also work hardened. The valve stem is cold formed from cylindrical stock without scrap. The skirt is formed by first upsetting an intermediate head and



subsequently further upsetting such head while backward extruding a tubular skirt. Subsequently the tubular skirt is deformed by a conical tool to a conical shape. The opposite end of the valve stem is forward extruded to a polygonal shape to provide a wrenching portion.

3,669,408

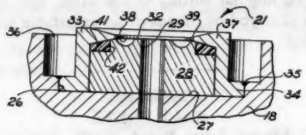
METAL TO METAL SEA FOR EXTREME TEMPERATURE APPLICATIONS

David W. Baxter, Jr., Sylmar, Calif., assignor to Textron Inc.

Filed Jan. 14, 1970, Ser. No. 2,814

Int. Cl. F16k *51/00, 1/226*

U.S. Cl. 251—359 **9 Claims**



Disclosed is an electromagnetically operated force motor which positions a valve member with respect to a valve seat to open and close a valve, thereby controlling the flow of fluid through a chamber which is sealed with respect to the force motor. The valve seat is maintained in position by a mechanical bond which provides a fluid-tight seal under extreme temperature conditions, for example, cryogenic applications.

3,669,409

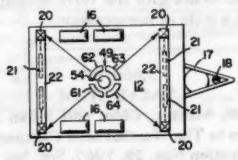
VEHICLE ATTITUDE STABILIZATION AND CONTROL SYSTEM

John Eranosian, 175 Phillips Road, Woodside, Calif.

Filed Dec. 14, 1970, Ser. No. 97,774

Int. Cl. B66f *7/26;* **B60s** *9/02;* **B66f** *3/22*

U.S. Cl. 254—45 **8 Claims**



A system for stabilizing and controlling the attitude of a vehicle with respect to the underlying terrain when stationary by means of double acting jacks including means for pressure equalization therebetween is disclosed. Electrical control circuitry providing means for fully automatic leveling including a novel pendulum actuated electrical switch is described. Novel jack means particularly adapted for use in the system and preferred electrical control circuitry are disclosed.

3,669,410

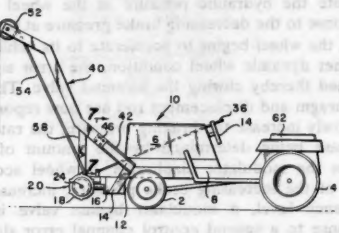
HOIST CONVERSION UNIT FOR SMALL TRACTORS

John F. Burr, 32 North Kanawha, Buckhannon, W. Va.

Filed July 24, 1970, Ser. No. 57,941

Int. Cl. B66c *23/60*

U.S. Cl. 254—139.1 **2 Claims**



The invention comprises an attachment for a hoist assembly for attachment to a self-powered vehicle having a front power takeoff comprising; a gear case assembly coupled to the fore frame of the tractor; a shaft extending horizontally through said gear case; a reeling drum and a ratchet wheel mounted on said shaft; a releasable pawl mounted on said gear case assembly for engagement with said ratchet wheel, a hoisting boom having means for mounting on the fore frame of the tractor, brace means for said boom supported on said gear case assembly and a cable trained around said reeling drum and extending over the upper end of said boom.

3,669,411

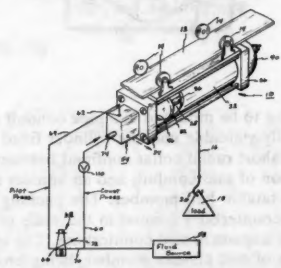
LOAD BALANCER

Lorne J. McKendrick, 5131 Surfwood Drive, Milford, Mich.

Filed Mar. 26, 1970, Ser. No. 22,986

Int. Cl. B66d *1/00*

U.S. Cl. 254—168 **6 Claims**



A pneumatic load balancer having a hoist cylinder adapted for attachment to an overhead support such as a hook, rail, trolley or the like having a piston assembly disposed in the cylinder, a fluid chamber and a lifting cable which is wound around a dual set of pulleys with one end anchored with respect to the cylinder and the other end arranged for attachment to a load. One set of pulleys is fixed against motion near the center of the cylinder and the other set is carried by the piston assembly to reel in or to unwind the cable from the cylinder upon movement of the piston assembly by means of fluid pressure. A pneumatic control system is provided which comprises a monostat in the form a pilot pressure operated fluid pressure regulator having a built-in relief valve and which is fitted to the cylinder inlet and which can be

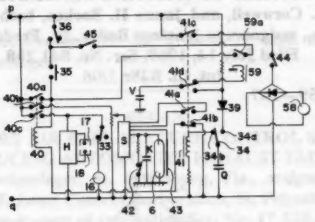
operated either through pilot or mechanical connections to adjust the pressure of fluid available at the inlet of the cylinder in correspondence with the load carried by the cable. Valve means are also provided which are normally open to communicate the fluid chamber with atmosphere and which closes upon an increased pressure in the chamber to thereby dampen upward movement of the cable.

3,669,412

CIRCUITRY FOR CONTROLLING AN ELECTROSTATIC COPIER

Masaya Ogawa, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha

Filed Dec. 22, 1969, Ser. No. 887,072
Claims priority, application Japan, Dec. 31, 1968, 44/730
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **6 Claims**



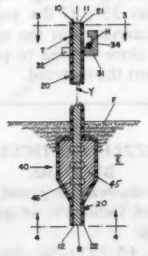
A safety relay is serially connected with a manual switch for initiating operation of an electrostatic copier. A first contact of the relay maintains current in the relay coil, a second contact interconnects the power source with a high voltage generating source, and a third contact interconnects the power source with a discharge circuit. A two-position switch has a first position for connecting a voltage storage device to a power source and a second position for actuating a flash circuit. Another relay releases the safety relay with the two-position switch in the second position.

3,669,413

ELECTRICAL FENCE CONSTRUCTION

Ralph L. Laible, 14008 North 24th Street, Route 6, Omaha, Nebr.

Filed Nov. 9, 1970, Ser. No. 87,979
Int. Cl. E01k *3/00*
U.S. Cl. 256—10 **3 Claims**



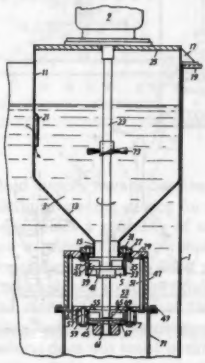
There is described electrical fencing comprising a plurality of upright elongate fence posts, each fence post comprising an upright rigid metallic-rod adapted to be embedded into the earth, said metallic-rod carrying an uprightly extending resinous electrically-insulative resinous sheath disposed at an elevation common to the fencing current-carrying conductor wire(s). Although the conductor wire might be tied directly to the fence post external resinous sheath, preferably an intervening C-shaped wire-connector member is utilized which is removably frictionally engaged at a selectable continuum of elevations along the fence post sheath. The lower portion of the fence post might include an angular anchor-plate admirably suited to maintain the fence post perpendicular to the earth's surface.

3,669,414

MIXING APPARATUS

Gordon D. Love, 171 Battersea Road, London, England

Filed Mar. 19, 1969, Ser. No. 808,499
Claims priority, application Great Britain, Mar. 25, 1968, 14,363/68
Int. Cl. B01f *7/26*
U.S. Cl. 259—8 **13 Claims**



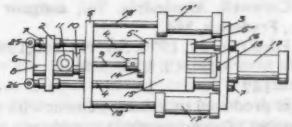
Apparatus for mixing solid material with a liquid wherein a mixer device comprising a casing and an impeller is mounted below an outlet at the bottom of a subsidiary vessel. Liquid and solid material are continuously supplied to the subsidiary vessel, separately or together. Material within the casing is expelled outwardly by the impeller and is subjected to thorough mixing and disintegration. Further material, drawn downwardly in the subsidiary vessel, is directed towards the mixer casing by inwardly and downwardly sloping side walls of the subsidiary vessel.

3,669,415

MACHINE FOR MIXING, PLASTICATING AND PRESSING OUT OF PLASTICS, RUBBER AND OTHER HIGHLY VISCOUS MATERIALS AT CONTROLLED PRESSURE

Henrik Nielander, Schaufelbergerstrasse 58, CH-8055 Zurich, Switzerland

Filed Feb. 10, 1970, Ser. No. 10,215
Claims priority, application Switzerland, Feb. 11, 1969, 2011/69
Int. Cl. B01f *9/02*
U.S. Cl. 259—12 **20 Claims**



A mixing and plasticating machine which comprises a mixing and plasticating cylinder, an axially movable mixing and

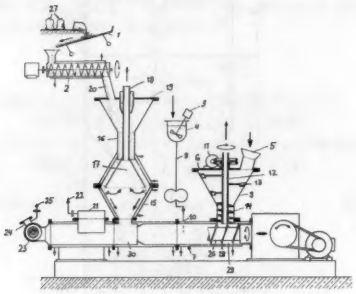
plasticating rotor with passages, the shaft of said mixing and plasticating rotor being connected to a rotary drive outside the mixing and plasticating cylinder, and an axially movable pressing piston. Said mixing and plasticating rotor and said pressing piston are axially movable independently of each other in said mixing and plasticating cylinder.

3,669,416

METHOD AND AN APPARATUS FOR THE PRODUCTION OF DISPERSIONS OF DYESTUFFS

Fritz Sutter, and Andreas Maier, both of Pratteln, Switzerland, assignors to Buss AG, Basel, Switzerland

Filed Nov. 23, 1970, Ser. No. 91,853
Claims priority, application Switzerland, Dec. 10, 1969, 18481/69
Int. Cl. B01f *7/08, 15/02*
U.S. Cl. 259—21 **4 Claims**



The present invention relates to a method for the production of dispersions of dyestuffs, in which the initial ingredients are fed individually and at different locations and stages into a continuously operating mixing and kneading machine and are processed therein. The dyestuff pigments are first mixed and degassed with slight heating whereafter they are conveyed in sliding motion into the apertures of the mixing and kneading machine and in such a manner that the material falls into the machine adjacent the periphery of the cross-section of the filling aperture leaving in the center, a free space for the exhaustion of gas. In addition, the invention relates to an apparatus for carrying out this method comprising a continuously operable mixing and kneading machine, having a rotatable and simultaneously oscillatable shaft with worm blades, said machine being provided with spatially separated filling apertures, a heatable conveyor worm and a drop chute for feeding dyestuff pigments, the said drop chute having conical enlargements at its upper and lower end and a downwardly open slide cone having a central upwardly directed exhaust pipe, which is provided in the end region of the lower conical enlargement.

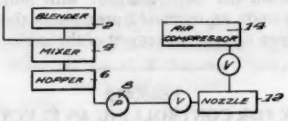
3,669,417

METHOD OF MIXING AND PLACING CONCRETE

Charles E. Cornwell, Alexandria, Va., assignor to Jennings Bailey, Jr., Frederick, Md.

Filed Dec. 21, 1970, Ser. No. 100,198
Int. Cl. B28c *5/06*
U.S. Cl. 259—147 **2 Claims**

Concrete is produced by mixing cement with substantially the exact amount of water needed to produce a setting of the cement, and the mixture is then thoroughly agitated until its viscosity is substantially reduced. Dry sand or other aggregate is then added, and mixed with the slurry. This mixture is then pumped under pressure to a nozzle, which has an outlet passage tapering inwardly and ending in a transverse slot. Air under pressure is emitted in the form of jets into the



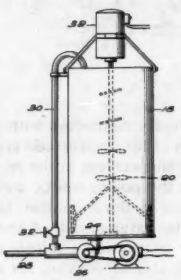
tapering end part of the nozzle on the outside of the concrete mix flowing therethrough.

3,669,418

METHOD OF SPRAYING CONCRETE

Charles E. Cornwell, and James H. Backus, both of Alexandria, Va., assignors to Jennings Bailey, Jr., Frederick, Md.

Filed July 14, 1969, Ser. No. 841,298
Int. Cl. B28c *5/06*
U.S. Cl. 259—147 **4 Claims**



A method of producing concrete includes admixing with dry cement the amount of water for producing complete setting, thoroughly beating the cement and water, and adding substantially dry sand or aggregate. The water-cement mixture is usually too stiff to be workable, but is reduced by the beating action to a less viscous product, capable when aggregate is added thereto of being blown into a reinforcing material such as a wire screen and of penetrating through the screen into contact with a backing. The amount of water is preferably of the order 35 – 37 lbs. per 100 lbs. of cement. The equipment for carrying out the spraying may be such that compressed air alone is used to provide the power for stirring and to transport the material.

3,669,419

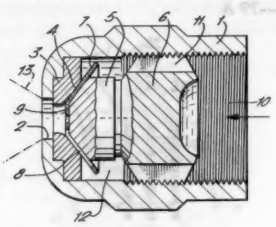
ATOMIZING NOZZLE, PARTICULARLY FOR OIL-BURNERS

Jorgen Hartvig Petersen, Nordborg, and Leif Viggo Sturlason, Sonderborg, both of Denmark, assignors to Danfoss A/S, Nordberg, Denmark

Filed Jan. 13, 1971, Ser. No. 106,054
Claims priority, application Germany, Feb. 18, 1970, P 20 07 342.1
Int. Cl. B05b *1/26*
U.S. Cl. 239—544 **4 Claims**

The invention relates to an atomizing nozzle having a tubularly shaped housing with an outlet orifice at one end thereof. An annularly shaped member having a frustoconically shaped backing surface is adjacent the orifice. A frustoconically shaped shell member is held in position against the backing surface with a screw member having a frustoconically shaped

male surface. Grooves or slots are provided in the shell member and either or both of the frustoconically shaped sur-



faces are cooperable with the grooves or slots to provide fluid flow passages.

3,669,420

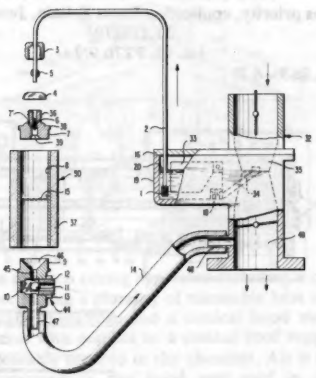
AUXILIARY AIR FUEL MIXTURE CONTROL SYSTEM FOR REDUCING AUTOMOTIVE EXHAUST EMISSIONS

Ray D. Loudenslager, St. Petersburg, Fla., assignor to Automotive Exhaust Control Corporation, St. Petersburg, Fla.

Continuation-in-part of application Ser. No. 17,520, Mar. 16, 1970, now abandoned. This application Nov. 17, 1971, Ser. No. 199,456

Int. Cl. F02m *7/24*

U.S. Cl. 261—23 A **4 Claims**



A generally sealed, thermally insulated diffusion chamber is coupled via a capillary tube to the fuel bowl of an automotive internal combustion engine with the capillary tube terminating at the upstream end of the diffusion chamber in a fuel jet nozzle which directs fuel into a venturi leading into the diffusion chamber. A plurality of small air inlet holes upstream of the venturi intersects the fuel leaving the jet nozzle to effect a low temperature thermally and molecularly changed air fuel mixture which is highly diffused and which is delivered by means of insulated tubing from the diffusion chamber to the intake manifold downstream of the carburetor under a delayed or partially retained action, greatly reducing exhaust emissions, especially during deceleration of the vehicle.

3,669,421

COOLING MEDIUM-MOVING DEVICES FOR GAS-LIQUID CONTACTING APPARATUS

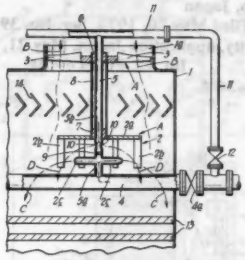
Edmund Murphy, La Spezia, Italy, assignor to Cooling Developments Ltd., Lucerne, Switzerland

Filed Mar. 6, 1970, Ser. No. 17,068

Claims priority, application Great Britain, Mar. 24, 1969, 15,194/69

Int. Cl. B01f *3/04*

U.S. Cl. 261—25 **7 Claims**



The operating fluid supply means for the fan-driving turbine of a cooling medium-moving device for a gas-liquid contacting apparatus comprises a plurality of supply pipes, one of which is designed to supply fluid to a main nozzle or nozzles to effect the operation of the turbine and the other or others of which is/are designed to supply fluid to a secondary nozzle or nozzles to assist the driving of the turbine and/or is/are provided with a fluid outlet aperture or apertures, the fluid issuing from which does not assist in driving the turbine, whereby the operating fluid may be selectively distributed amongst any one or more of said pipes so as to vary the speed of rotation of the turbine as desired.

3,669,422

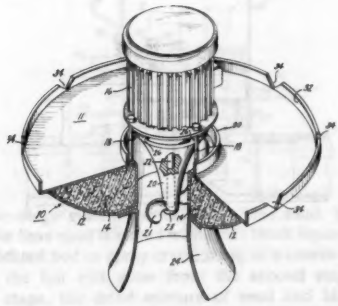
AERATION APPARATUS

Richard J. Nogaj, Winfield, Ill., assignor to Keene Corporation

Filed Oct. 19, 1970, Ser. No. 81,994

Int. Cl. B01f *7/16*

U.S. Cl. 261—34 **11 Claims**



An aerator for use in waste water treatment plants for imparting oxygen to liquid moving through the system including a buoyant pontoon having a central opening designed to float on the liquid. A motor mounted on the pontoon has its shaft extending axially through the pontoon opening and propeller blades are attached to the end of the shaft for pumping the liquid up through the opening and outwardly therefrom for imparting oxygen to the liquid. A shelf located on the pon-

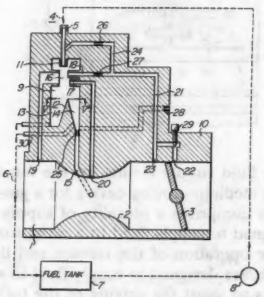
toon upper surface is dry when the unit is not in operation and therefore tends to counterbalance the downward pull of the propellers during starting. As a portion of the pumped liquid fills the tray, it acts as a ballast for the unit during the pumping operation.

3,669,423

CARBURETOR

Yukio Hohsho, Katsuta; Koichiro Yamada, Hitachi; Yoshishige Oyama, Hitachi; Takao Teranishi, Hitachi, and Seikou Suzuki, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 20, 1970, Ser. No. 39,076
Claims priority, application Japan, May 21, 1969, 44/38734
Int. Cl. F02m *69/04*
U.S. Cl. 261—36 A **5 Claims**



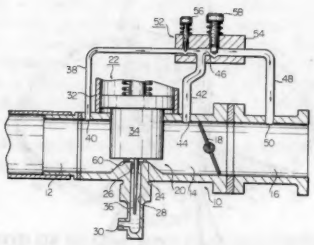
A carburetor capable of suitably controlling the fuel flow rate over the entire operational range of the associated engine using a three-dimensional-type fluidic device.

3,669,424

CARBURETOR OF VARIABLE-AREA VENTURI TYPE

Masaji Shiobara, Chigasaki City, and Genji Watanabe, Tokyo, both of Japan, assignors to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama City, Japan

Filed Dec. 8, 1970, Ser. No. 96,141
Int. Cl. F02m *3/08*
U.S. Cl. 261—44 R **2 Claims**



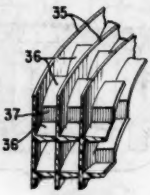
A carburetor of the variable-area venturi type for an internal combustion engine, adapted to reduce the amount of hydrocarbons in the exhaust gases emitted from the engine during idle operation of the automotive. The carburetor includes additional passages by-passing the carburetor throttle valve and means to adjust an air-fuel ratio and amount of a fuel mixture to be supplied to the engine during the idle operation.

3,669,425

WATER COOLING TOWER

John H. Copeland, Borough of Ringwood, N.J., assignor to P. T. & T. Industries, Inc., Franklin Lakes, N.J.

Filed July 30, 1970, Ser. No. 59,559
Int. Cl. B01d *45/00;* **B01f** *3/04*
U.S. Cl. 261—79 A **4 Claims**



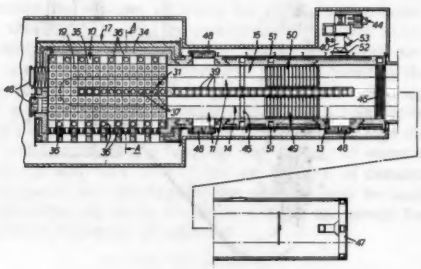
A water cooling tower is shown which comprises a blower opening into the bottom of the tower for introducing or blowing air into the tower. A continuously walled wet decking arranged in a spiral mounted above the air inlet port and having a large number of regularly spaced projections arranged in an inclined checkerboard or step like pattern to control the counterflowing air and water in the tower. A spray tree for introducing water into the vessel is mounted above the wet decking and a mist eliminator mounted above the spray tree. The mist eliminator is also constructed in the form of a continuously spirally wound vertical wall with adjacent surfaces of the eliminator wall being separated by a multiplicity of step like baffles.

3,669,426

FURNACES

Robert George Whitehouse, Wombourne, England, assignor to Ferro Corporation

Filed Oct. 26, 1970, Ser. No. 83,701
Claims priority, application Great Britain, June 26, 1970, 31,118/70
Int. Cl. F27b *9/24*
U.S. Cl. 263—8 R **4 Claims**



A direct fired tunnel-type continuous heat treating furnace, particularly adapted to fire porcelain enamel articles, wherein the conventional muffle has been eliminated in favor of a system of perforate refractory shapes, so disposed to channel, and directly and evenly distribute, heat from the burners of said furnace throughout its hot zone.

3,669,427

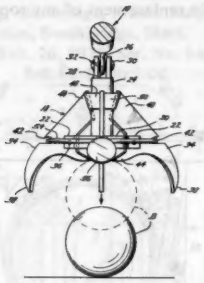
GOLF BALL RETRIEVER

Gerald J. Curtis, 8806 Glen Loch, Houston, Tex.

Filed July 13, 1970, Ser. No. 54,169
Int. Cl. A47f *13/06*
U.S. Cl. 294—19 **5 Claims**

A golf ball retriever having pivotally mounted claw members which are yieldably urged toward closed position and

which are held in open position by trigger mechanism operated by engagement with the ball to be retrieved to cause the claw members to snap closed on the ball. The trigger mechanism includes means for adjusting the sensitivity thereof so that the mechanism operates in response to very



light contact with the ball to actuate the claw members. Sighting means is provided for positioning the mechanism accurately over the ball by manipulation with an extensible telescoping handle.

3,669,428

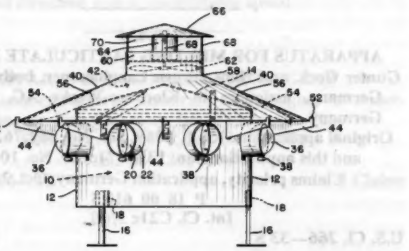
TOBACCO HEATING AND CURING APPARATUS

Donald E. Jones, Clinton, N.C., assignor to Vann Industries, Inc., Clinton, N.C.

Filed June 1, 1970, Ser. No. 41,889

Int. Cl. F23l 9/04

U.S. Cl. 263—19 D **10 Claims**



A pipeless tobacco curing apparatus including a cylindrical heat chamber having a plurality of releasable heat outlets extending radially therefrom and a conical hood mounted in spaced relation with respect to a slanted roof supported by brackets releasably secured to the chamber. Air is forced by a blower intermediate the hood and roof in directions generally radially of the chamber and over the heat outlets while being controlled by a series of air deflectors.

3,669,429

TOBACCO CURING APPARATUS

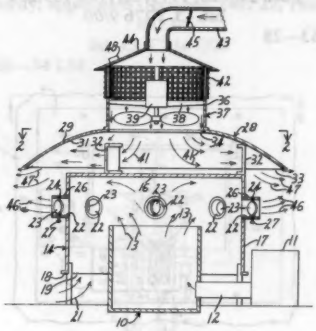
Robert C. Dew, New Albany, Ind., assignor to Stration & Terstegge Co., Inc.

Filed Mar. 26, 1971, Ser. No. 128,272

Int. Cl. F23l 9/04

U.S. Cl. 263—19 D **11 Claims**

Tobacco curer for enclosed space having open top combustion chamber with heat exchanger housing surrounding and spaced therefrom. Horizontal top of housing connected to depending side wall with air inlet adjacent bottom of housing. Angularly spaced radial outlets in housing discharge but air and products of combustion. Conical hood spaced from top of housing provides continuous annular outlet which receives air under pressure from a blower through a central inlet in hood. The blower receives air from inside and outside



the enclosed space and air discharged from annular outlet moves at greater velocity than air and products of combustion discharged from radial outlets.

3,669,430

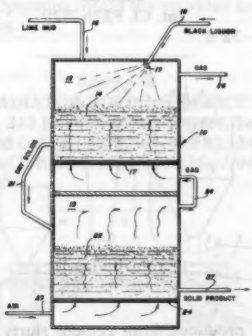
TWO-STAGE LIME MUD CALCINER

George G. Copeland, Western Springs, Ill., assignor to Copeland System Inc., Oak Brook, Ill.

Filed Aug. 13, 1970, Ser. No. 63,544

Int. Cl. F27b 15/00

U.S. Cl. 263—21 A **6 Claims**



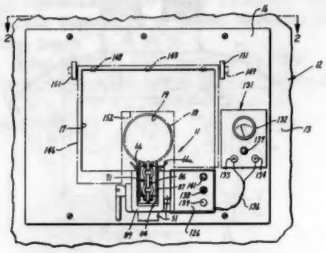
A two-stage system for calcining lime mud. In the first stage the lime mud is mixed with kraft black liquor and dried in a fluidized bed or spray dryer, using as a source of heat for drying, the hot exit gases from the second stage. In the second stage, the dried mixture of mud and black liquor solids is calcined in a fluidized bed operation carried on at temperatures between 1400° and 1900° F. The dried black liquor solids are used as fuel for the calcining operation. The hot exhaust gases from the second stage calcining operation are recycled to the first stage and are used to dry the kraft black liquor in the first stage drying system. Calcined product is continuously removed from the second stage calcining operation and conveyed back to the recausticizing system for reuse in the process.

3,669,431

BOAT PULLING APPARATUS FOR DIFFUSION FURNACE AND METHOD

Andris Lenss, Sunnyvale, and Lionel A. Kirton, Saratoga, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Filed Jan. 25, 1971, Ser. No. 109,232
Int. Cl. F27b 9/00
U.S. Cl. 263—28 11 Claims



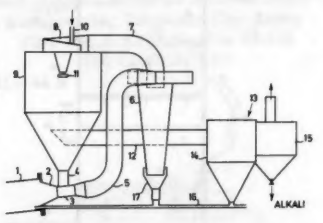
Boat pulling apparatus for use with a diffusion furnace having motive means, means connecting the motive means to the boat, and means for controlling the operation of the motive means whereby the boat is withdrawn at a predetermined rate of speed from the diffusion furnace.

3,669,432

PROCESS FOR PRODUCING CEMENT FROM CEMENT SLURRY AND A PLANT FOR CARRYING OUT THE PROCESS

Klaus Erik Gude, Virum, and Bjorn Lund, Kobenhavn F, both of Denmark, assignors to Aktieselskabet Niro Atomizer, Soborg, Denmark

Filed Sept. 4, 1970, Ser. No. 69,801
Claims priority, application Denmark, Sept. 10, 1969, 4850/69
Int. Cl. F27b 7/20
U.S. Cl. 263—32 R 7 Claims



Cement is produced from cement slurry which is spray-dried and preheated by means of exhaust gas from a kiln. The heat exchange between the exhaust gas from the kiln and the spray-dried material is controlled observing certain temperature limits, whereby an efficient elimination of harmful alkalies is obtained. Saving of investment is possible due to the fact that the kiln can be constructed shorter, or the capacity of an existing kiln can be increased.

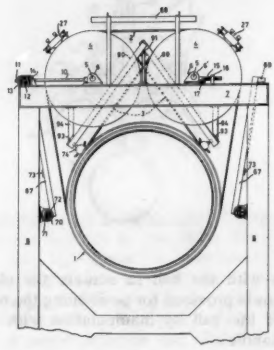
3,669,433

WIRE ROPE SUSPENSION SYSTEM AND ROPE CONNECTOR FOR ROTARY DRYERS AND THE LIKE

George P. Hurst, 235 Hill Street, Jackson, Calif.

Filed Jan. 4, 1971, Ser. No. 103,634
Int. Cl. F27b 7/20
U.S. Cl. 263—33 R 16 Claims

A rotary, horizontally-extending tube-dryer, kiln, washer and the like, suspended by sets of wire ropes from over head sheaves for rotation. Each of the wire ropes and its sheave are rotatable independently of the others, and each rope comprises a length connected at its ends by a connector to make it endless, and each connector includes elements to enable shifting the length thereof bodily relative to the body of the connector to distribute the wear to different portions of the rope to prolong its life. Each connector is also constructed to enable replacement of any rope independently of



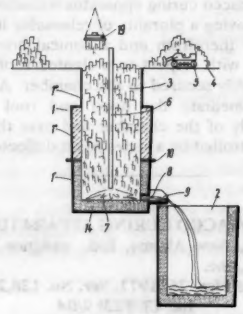
the others without jacking up the tube or shifting the sheave over which the rope extends, and guide elements on one or more connectors of each set of ropes cooperate with stationary members to support the connectors when out of contact with the sheaves or tube. Also, the tube-supporting wire ropes, in some installations, support the tube against lateral swaying without the use of rollers in fixed positions at the sides of the tube, a pair of supporting sheaves being provided for each rope.

3,669,434

APPARATUS FOR MELTING PARTICULATE METAL

Gunter Geck, and Hans Jurgen Langhammer, both of Hagen, Germany, assignors to Klockner-Werke AG, Duisburg, Germany

Original application Oct. 1, 1969, Ser. No. 862,762. Divided and this application Jan. 13, 1971, Ser. No. 106,127
Claims priority, application Germany, Oct. 2, 1968, P 18 00 610.5
Int. Cl. C21c 5/00
U.S. Cl. 266—33 S 10 Claims



An upright elongated in part refractory lined melting chamber in which a charge of particulate metal is melted by the flame of a lance such that the metal of the charge melts and flows onto the bottom wall of the chamber and thereby becomes interposed between the flame and the bottom wall,

whereby the bottom wall is protected from the flame of the interposed metal. An outlet is provided beneath the flame for evacuating the melted metal from the melting chamber.

3,669,435

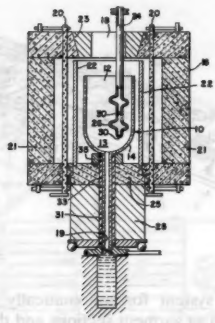
ALL-CERAMIC GLASS MAKING SYSTEM

Carl G. Silverberg, Sturbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Feb. 26, 1970, Ser. No. 14,599

Int. Cl. F27b *3/00*

U.S. Cl. 263—40 R **23 Claims**



System for producing high quality laser glass including an all-ceramic melter with an integral orifice tube. One important embodiment of the invention includes an all-ceramic hollow bladed stirrer with means for rotating the stirrer in any desired direction and at controllable speed.

3,669,436

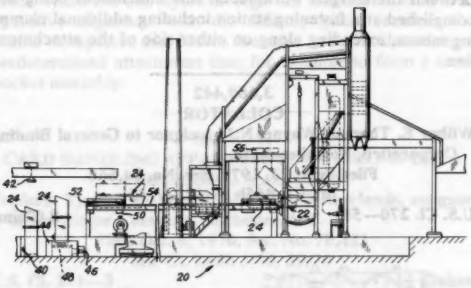
APPARATUS FOR PREHEATING SCRAP

Roland Kemmetmueller, Pittsburgh, Pa., assignor to American Waagner-Biro Company, Inc., Pittsburgh, Pa.

Filed Apr. 14, 1970, Ser. No. 28,456

Int. Cl. C21c *5/00*

U.S. Cl. 266—13 **9 Claims**



An apparatus for operating furnaces in metal-treating plants. The furnaces require a charge made up at least in part of scrap metal. The scrap metal is preheated prior to reaching the furnace, either by making use of special burners or by utilizing waste heat which is available in the plant. The scrap in a suitable container is preheated and then delivered in this condition to the furnace so that the extent to which heat must be supplied in the furnace itself is reduced.

3,669,437

HOLDER FOR AN OXYGEN SUPPLY PIPE

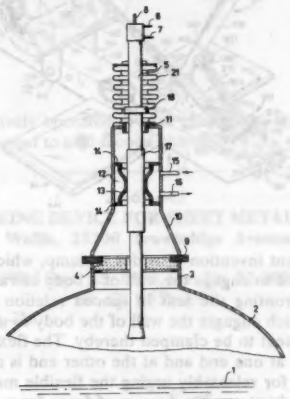
Hans-Joachim Wernicke, Neuenhain, Taunus, Germany, assignor to Messer Griesheim GmbH, Frankfurt am Main, Germany

Filed Dec. 17, 1970, Ser. No. 99,004

Claims priority, application Germany, Dec. 22, 1969, P 19 62 653.0

Int. Cl. C21c *7/00*

U.S. Cl. 266—34 LM **6 Claims**



A holder for an oxygen supply pipe for a vacuum furnace having a lid including a sleeve, said sleeve being disposed around said pipe. A pressurizable sealing means is disposed in the sleeve and, when pressurized, forms a releasable vacuum seal between the interior of the sleeve and the exterior of the pipe. Operating means are provided for pressurizing the sealing means.

3,669,438

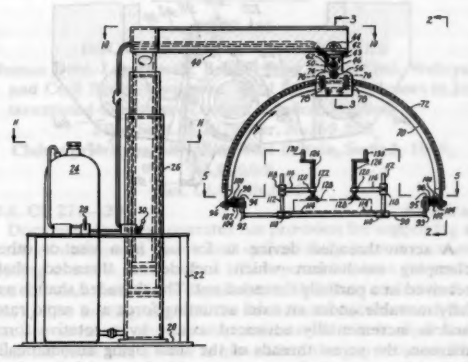
RADIATOR HOLDING DEVICE

McNeal Pannell, 210 Knowles Street, Kilgore, Tex.

Filed Oct. 22, 1970, Ser. No. 83,124

Int. Cl. B25b *1/18, 1/22;* **B25q** *1/04*

U.S. Cl. 269—20 **1 Claim**



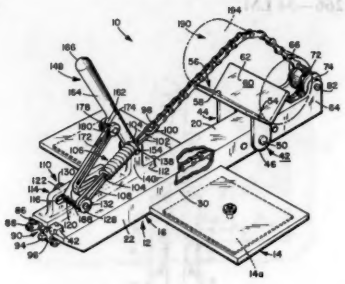
A hydraulic holding and positioning device having a rotatable arm in a horizontal plane and a holder pivotable in a vertical plane.

3,669,439

CLAMP

Anastacio V. Sanchez, 10775 Foothill Boulevard, Cupertino, Calif.

Filed July 6, 1970, Ser. No. 52,213
Int. Cl. B23q *3/18*; B25b *1/24, 5/14*
U.S. Cl. 269—130 **1 Claim**



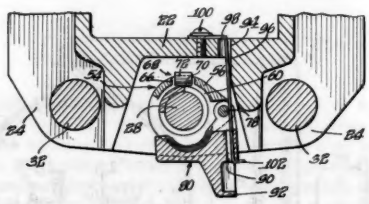
The present invention provides a clamp, which includes a seat arranged to engage the wall of a body of varying dimensions. Confronting the seat in spaced relation is a flexible member which engages the wall of the body to urge the body toward the seat to be clamped thereby. The flexible member is anchored at one end and at the other end is attached to a mechanism for releasably urging the flexible member to engage the body at varying degrees of force for a clamping action in cooperation with the seat. The seat, the flexible member and the mechanism are supported by a base to provide a unitary structure.

3,669,440

QUICK ENGAGING AND DISENGAGING NUT MECHANISM

Ray Kartasuk, Lincolnwood, and Ray Gloridso, Oak Park, both of Ill., assignors to Wilton Corporation, Cook County, Ill.

Continuation-in-part of application Ser. No. 860,661, Sept. 24, 1969, now abandoned. This application June 18, 1970, Ser. No. 47,302
Int. Cl. B25b *1/12*; F16h *1/16*
U.S. Cl. 269—181 **19 Claims**



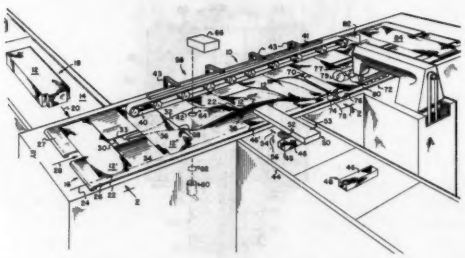
A screw-threaded device as for use in a vise or other clamping mechanism which includes a threaded shaft received in a partially threaded nut. The threaded shaft is axially movable under an axial actuating force at a rapid rate, and is incrementally advanced axially by a rotative force thereon, the screw threads of the shaft being automatically moved into or out of engagement with the partial threads of the nut upon rotation of the shaft in advancing or retracting direction. One spring coacts between the nut and a guide yoke on the shaft to guide the nut in and out of engagement with the shaft, while a second spring on the yoke bears against the shaft and tends to turn the yoke with the shaft. A second form of the invention uses the same, or essentially the same, partially threaded nut and guide yoke, but uses a positive pivot pin for guiding the partially threaded nut in and out of engagement with the threaded shaft.

3,669,441

METHOD AND SYSTEM FOR AUTOMATICALLY ASSEMBLING LIMP WORKPIECES, SUCH AS GARMENT SECTIONS AND THE LIKE

Harry B. Minasian, Bronx, N.Y., assignor to Ivanhoe Research Corporation, New York, N.Y.

Filed Apr. 6, 1970, Ser. No. 25,838
Int. Cl. B42b *1/02*; B65h *5/30*
U.S. Cl. 270—53 **7 Claims**



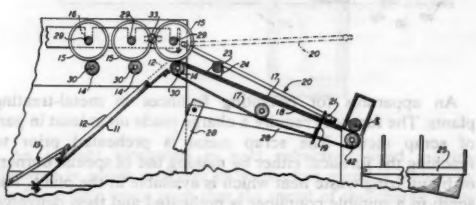
Method and system for automatically assembling limp workpieces, such as garment sections and the like in which a succession of first workpieces are transported by a compound conveyor system, and an overhead ramp displaces a portion of each of the first workpieces away from the conveyor to provide a clearance space for insertion of a succession of second workpieces. The conveyor system includes a pair of spaced parallel conveyor belts defining a gap between them, and the ramp has a leading end extending down into the gap to engage beneath the first workpieces with the ramp sloping upwardly and widening in the direction of advancement for elevating the displaced portions of the first workpieces. Transfer apparatus is arranged to reach into the clearance space beneath the ramp to deposit the second workpieces onto the conveyor belt beneath the ramp, and first clamping means holds another portion of the first workpiece on the other belt. The ramp descends to merge the first and second workpieces. The belt beneath the ramp terminates and is replaced by a pair of conveyor belts defining a gap corresponding with the desired line of attachment between the merged workpieces, this attachment being accomplished at a fastening station including additional clamping means, extending along on either side of the attachment line.

3,669,442

COLLATOR

Wilbur E. Thomas, Wayne, N.J., assignor to General Binding Corporation, Northbrook, Ill.

Filed Sept. 23, 1970, Ser. No. 74,666
Int. Cl. B65h *39/02, 31/36*
U.S. Cl. 270—58 **8 Claims**



A collator wherein an inertial roller projects successive sheets toward a gate, and the roller support intercepts sheets

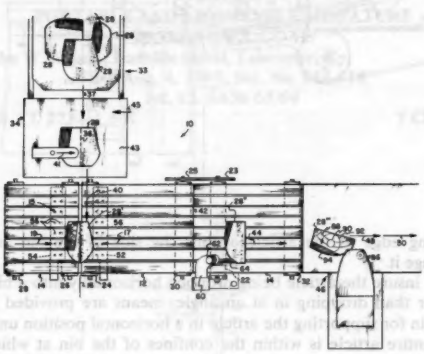
that may bounce back; idlers adjustable with respect to feed rollers; a paper deflector imparting a concave aspect to sheets moving onto a stacking table; and idlers larger than driven rollers in juxtaposition peripherally with adjacent idlers.

3,669,443

METHOD AND SYSTEM FOR AUTOMATICALLY FORMING PARTS FOR GARMENTS, AND THE LIKE

Douglas G. Nolles, New Canaan, Conn., assignor to Ivanhoe Research Corporation, New York, N.Y.

Filed Apr. 1, 1970, Ser. No. 24,607
Int. Cl. B65h 45/00
U.S. Cl. 270—69 12 Claims



A method and system for automatically forming parts for garments and the like is described wherein limp workpieces such as garment sections which are precut, are fed to an alignment station to register a desired predetermined crease line of the workpieces in precision alignment with a fold line defined by the nip of a pair of merging endless conveyors. The aligned workpieces are then deposited on the conveyors with the predetermined crease line aligned with the fold line, and the conveyors begin moving so that they can draw the workpiece between them and simultaneously fold it along the desired crease line. The conveyors transport the folded workpieces, such as pocket sections, downwardly past a pressurized region and back to an elevated workpiece delivery plane where the conveyors diverge. An attachment station in operative alignment with the delivery plane receives the folded workpieces and fastens the sides to each other along a predetermined attachment line, for example to form a sewn pocket assembly.

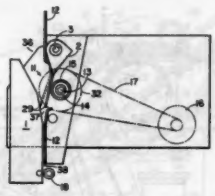
3,669,444

CARD HANDLING APPARATUS FOR CARDS IN DATA PROCESSING MACHINES

Frederik Tjado Van Namen, Nijmegen, Netherlands, assignor to The Singer Company, Rochester, N.Y.

Filed Oct. 6, 1970, Ser. No. 78,422
Int. Cl. B65h 5/06, 29/20
U.S. Cl. 271—3 11 Claims

The invention relates to an apparatus for transferring a data card, such as a magnetic stripe ledger card, from a first card guide channel, which leads from the card feed entrance, into a working position or station, to a second card guide channel which leads from said working position to a parking or waiting position. The apparatus comprises means which cooperates with the card feed mechanism and with the card to be parked, and while maintaining that cooperation, transfers the card from the first card guide channel to the second card guide channel and holds it in said second card guide channel, pending a requirement to return the card to the first card guide channel for a subsequent use or operation on the card. The two card guide channels have a common section



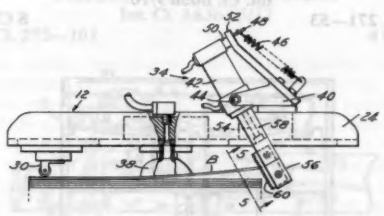
and a selectively operated pivotal vane guides the card from said first channel to said second channel.

3,669,445

DE-STACKING DEVICE FOR SHEET METAL BLANKS

Bernard J. Wallis, 25200 Trowbridge Avenue, Dearborn, Mich.

Filed Sept. 15, 1970, Ser. No. 72,400
Int. Cl. B65h 3/08
U.S. Cl. 271—26 6 Claims



A de-stacking device for a stack of sheet metal blanks having a vertically movable head adapted to engage the top of the stack of blanks and a saw-tooth blade on the head adapted to engage the edge of the topmost blank and upwardly movable for peeling the topmost blank from the stack.

3,669,446

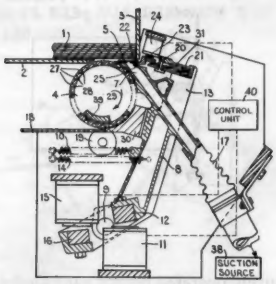
DOCUMENT FEEDING APPARATUS

Roman Derc, Letchworth; Ronald John Frank Eltel, Welwyn, and Cecil Bragg, Congleton, all of England, assignors to International Computers Limited, London, England

Filed Sept. 3, 1970, Ser. No. 69,200
Claims priority, application Great Britain, Sept. 5, 1969, 44,026/69
Int. Cl. B65h 3/50
U.S. Cl. 271—29 5 Claims

Document feeding apparatus has provision for supporting a stack of documents above and spaced away from a vacuum feeding drum. A suction shoe is interposed between the stack and the drum and has a depression in that face nearer to the stack. The leading edge of the lowermost document of the stack is attracted into the depression so that it is separated from the stack and a knife is moved into the gap between the attracted edge and the stack to maintain the separation. The suction shoe is then withdrawn to allow the separated edge to move into contact with the vacuum drum which then withdraws the lowermost document completely from the stack.

A refinement allows the thickness of document in the depression of the vacuum shoe to be examined in order to detect the separation of more than one document or to detect failure of a document to be separated before the feeding cycle is proceeded with.

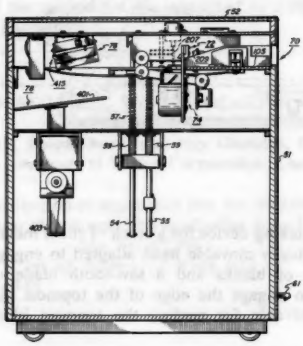


3,669,447

SHEET PROPELLING APPARATUS

Lyman H. Turner, Pittsford, and Rhinehart A. Manzek, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sept. 9, 1970, Ser. No. 70,833
Int. Cl. B65h 9/16
U.S. Cl. 271—53 **8 Claims**



Sheet propelling apparatus for use with a sheet stacking assembly which includes a shaft member, a hub member affixed thereto, and a plurality of blade members extending from the hub member to contact sheet material fed along a sheet path. The blade members are made from a flexible material of predetermined shape and thickness and formed to make a helix angle with the shaft axis of from about 20° to about 50° to impart one component of thrust on the sheet material at right angles to the sheet path and another component of thrust in the same direction of the sheet path.

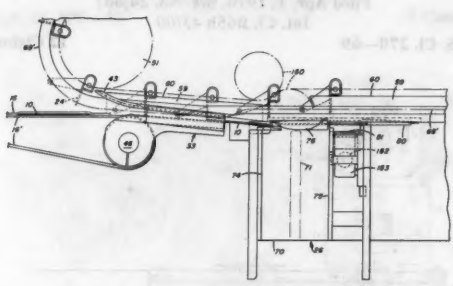
3,669,448

SHEET FEEDING AND STACKING APPARATUS

Stanley R. Schieven, Webster, and Gerald A. Sampson, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 1, 1970, Ser. No. 42,104
Int. Cl. B65h 29/60, 29/26, 31/26
U.S. Cl. 271—64 **12 Claims**

An apparatus for feeding sheet-like articles along a path and selectively diverting them into one or the other of a plurality of bins where they are collected in stacked relation, comprises a series of pusher fingers spaced along an endless chain which is driven in synchronism with a source of supply of the articles so that the pusher fingers move in behind each article as it is fed to the stacker and pushes it until it is diverted into one of the bins. The drive for the pusher fingers is such that the fingers remain in substantially perpendicular relation to the plane of the article whether it is being diverted into a bin or is being moved along a horizontal path over one bin to the next, and the fingers are lifted from engagement with a diverted sheet as it enters a bin so as not to force the leading edge of the article against the side of the bin and damage it.



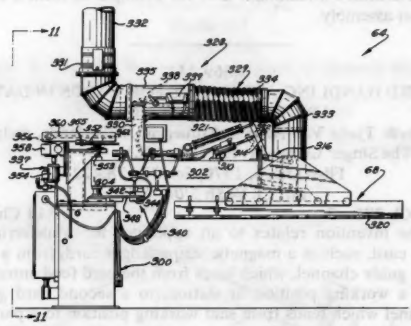
To insure the article being dropped horizontally into a bin, rather than dropping in at an angle, means are provided in the bin for supporting the article in a horizontal position until the entire article is within the confines of the bin at which time the support means moves from beneath the article and allows it to drop down into the bin in a horizontal or flat condition. To aid in stacking the articles, one end portion thereof is provided with an aperture which drops down over an inclined spindle projecting upwardly from the bottom of the bin.

3,669,449

METHOD AND APPARATUS FOR FORMING REFRACTORY PANELS

Robert R. Hayes, Euclid; John L. Fuller, Shaker Heights, and James R. Stockham, Lakewood, all of Ohio, assignors to Oglebay Norton Company, Cleveland, Ohio

Filed Apr. 20, 1970, Ser. No. 30,114
Int. Cl. B65h 29/32
U.S. Cl. 271—74 **3 Claims**



An improved apparatus for forming refractory panels includes a shredder assembly for shredding asbestos. Vacuum or suction is applied to an upper portion of a mix tank, which is partially filled with water, to pneumatically introduce the

shredded asbestos and a silica flower into the mix tank at a level below the water line to facilitate the formation of a refractory slurry in the mix tank. This refractory slurry is then conducted to a holding tank and from there to an associated vacuum box molding assembly. The vacuum box molding assembly includes a universal contour plate assembly for forming a mold cavity which is flooded with the refractory slurry. Vacuum or suction is applied to the mold cavity to draw off water from the slurry and form a wet cake panel. After the universal contour plate assembly has been pivoted to a raised position, a vacuum lift head on a radial arm machine pneumatically engages the wet cake panel and transfers it to a conveyor which transports the wet cake panel to a drying oven.

3,669,450

PORTABLE AND ADJUSTABLE MINIATURE BASKETBALL GOAL

John W. Mason, Danville Street, Lancaster, Ky.

Filed Aug. 4, 1969, Ser. No. 847,116

Int. Cl. A63b *63/04*

U.S. Cl. 273—1.5 R **7 Claims**

A portable miniature basketball goal for use by small children has a base adapted to rest on a flat supporting surface and carries a vertical standard to which is secured a backboard carrying a hoop. The base includes a platform for receiving anchor means and has flat, vertically extending front and side walls surrounding the front and side edges of the base. The walls are devoid of sharp corners throughout. Brace means extend between the base and vertical standard to secure the latter in vertical position, and the brace means are confined within the boundaries of and are completely shielded by the walls, so that the danger of physical injury to a child from collision with the goal or brace means is minimized, and recovery of a ball fumbled in the playing area is made easy.

3,669,451

CATAPULT GAME INCLUDING STRIKING WALLET AND RECEIVER

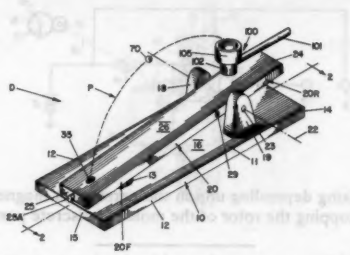
Dale K. Welbourn, P.O. Box 26, Neola, Iowa

Filed July 23, 1970, Ser. No. 57,726

Int. Cl. A63b *63/00*

U.S. Cl. 273—95 R **7 Claims**

A portable amusement device that also trains and develops the manual dexterity and coordination skills of a wide range of human subjects. The amusement device generally comprises a pivotal lever member having a rearward-portion and a forward-portion extending in opposite directions from a fulcrum; the lever forward-portion carries at least one projectile that is adapted to be catapulted freely upwardly rearwardly



therefrom toward the operator who attempts to retrievably capture the projectile in mid-air with an appropriate receptacle.

3,669,452

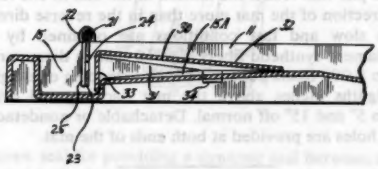
TABLE GAME TOP INSERT FOR CHANGING CONTOUR OF TABLE GAME SURFACE

Charles F. Foley, 3908 Merriam Road, Minnetonka, Minn., and Charles D. McCarthy, Route 3, Box 217BA, Deephaven, Minn.

Filed July 13, 1970, Ser. No. 54,508

Int. Cl. A63b *65/12*

U.S. Cl. 273—101 **4 Claims**



A table game normally for four players which is adaptable for use with two or more players, up to four, by the insertion of playing surface adapter pieces that transform the game board into a usable item for a fewer number of players than normal. The game board has goals or pockets and inclined surfaces leading to each of the goals. The insert disclosed herein provides a false floor so that at least one of the surfaces normally leading to the goal will be changed to a surface to urge a game piece to roll toward the goals in use, when less than the full number of players are playing the game.

3,669,453

ROTATABLE POINTER DRIVEN AND INDEXED BY THE ROTOR OF AN ELECTRONICALLY CONTROLLED MOTOR HAVING PERMANENT MAGNET POLES

John L. Du Bois, 1137 Noyes Street, Evanston, Ill., and Louis F. Grein, 6804 North Wolcott Avenue, Chicago, Ill.

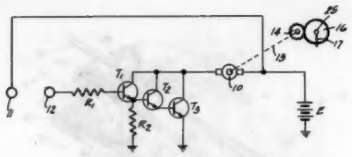
Filed Sept. 11, 1970, Ser. No. 71,458

Int. Cl. A63f *5/04*

U.S. Cl. 273—141 A **5 Claims**

An electronic game which includes a motor with its output shaft connected to a non-integral gear train for driving a pointer and in which the pointer may randomly stop at any of a number of discrete positions. The motor is energized in response to contact made by the user between a pair of ter-

minals and the motor rotates the pointer such that it stops in a random manner after the circuit has been interrupted with



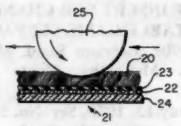
the indexing depending unpon the permanent magnets of the motor stopping the rotor of the motor at discrete positions.

3,669,454

TWO-SPEED GOLF MAT

Arthur Kolonel, 2661 South Course Drive, Apt. 510, Pompano Beach, Fla.

Filed Jan. 2, 1970, Ser. No. 299
Int. Cl. A63b *67/02*
U.S. Cl. 273—176 F 2 Claims



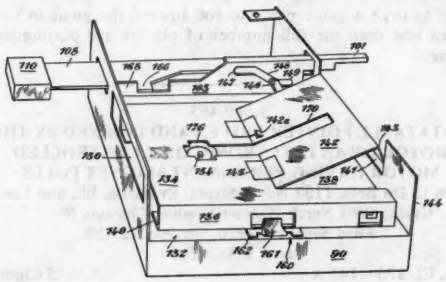
A golf putting mat for both indoor and outdoor use in which grass-simulating mat material has directionally oriented pile that resists the motion of the ball in one longitudinal direction of the mat more than in the reverse direction. Natural slow and fast conditions are obtained by using monofilament synthetic fibers 2 to 10 mils in diameter, with 2,000 to 8,000 fibers per square inch extending one-eighth to three-eighths inches above the mat backing and oriented between 5° and 15° off normal. Detachable or nondetachable putting holes are provided at both ends of the mat.

3,669,455

TAPE RECORDING DEVICE

Rodolfo Cicatelli, Roma, Italy, assignor to Antovox S.p.A., Rome, Italy

Filed Mar. 3, 1969, Ser. No. 803,692
Claims priority, application Italy, Oct. 9, 1968, 40334 A/68
Int. Cl. G11b *15/20, 15/24*
U.S. Cl. 274—4 E 12 Claims



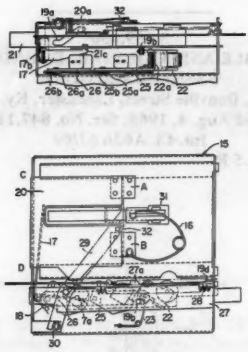
The tape recording device comprises a mechanism wherein the change from one speed mode to another is controlled by a single connecting plate, which is in turn actuated by an assembly which also governs the cassette slip-in, cassette positioning and ejecting units.

3,669,456

CASSETTE MOUNTING AND DISMOUNTING DEVICE

Yuzo Oteki, Tokyo-to, Japan, assignor to Beltek Kabushiki Kaisha, Tokyo-to, Japan

Filed Dec. 1, 1969, Ser. No. 881,117
Claims priority, application Japan, Feb. 21, 1969, 44/12511
Int. Cl. G11b *23/10*
U.S. Cl. 274—4 C 3 Claims



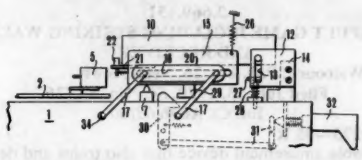
A device comprising a casing for receiving a cassette, a suspending plate for swingably lowering or elevating the casing, a tumbler spring for automatically receiving and expelling the cassette in and out of the casing, means for automatically displacing the cassette and casing to an operating position comprising a locking lever and a slidable plate, a cassette dismounting plate having a push button, and a knife-edged member rotatable around a fixed point in accordance with the displacement of the dismounting plate, so that when a cassette is pushed into the casing past a predetermined point, the cassette is automatically brought into the operable position, and, when the push button is depressed, the cassette is automatically removed from the operable position and expelled from the casing.

3,669,457

CASSETTE-LOADING MEANS FOR CASSETTE TAPE RECORDER

Yoshikuni Nozawa; Mitsuo Ishikawa, and Junjiro Kikuchi, all of Nagano, Japan, assignors to Sankyo Kogaku Kogyo Kabushiki Kaisha, Nagano, Japan

Filed Mar. 2, 1970, Ser. No. 15,695
Claims priority, application Japan, Mar. 3, 1969, 44/16397; 44/19205; 44/19206; July 24, 1969, 44/70748; July 28, 1969, 44/72084
Int. Cl. G11b *15/24*
U.S. Cl. 274—4 E 8 Claims



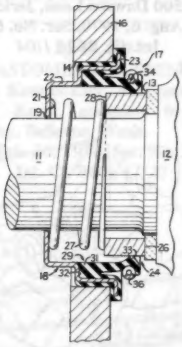
A tape cassette-loading means including a tape cassette receiving means which is mounted on a tape recorder for up-

ward and downward movement between a lowered operating position and a raised non-operating position. The cassette receiving means is provided with a cassette ejector to eject the tape cassette out of the receiving means thereby permitting it to be easily withdrawn or removed. As the tape cassette is manually inserted into the receiving means against the action of the ejector, the sliding movement of the cassette results in the automatic lowering of the receiving means to the lowered operating position where the tape cassette is in operative association with the tape recorder elements. The cassette receiving means is operatingly connected to the tape recorder body through at least two parallel-extended levers which are pivotally articulated at their opposite ends to the receiving means and the tape recorder body, respectively, so that the receiving means undergoes the vertical movement while constantly maintaining a parallel relation to the tape recorder base.

3,669,458
WATER PUMP SEAL

Marion J. Witzenburg, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 25, 1970, Ser. No. 75,625
Int. Cl. F16j *15/32*
U.S. Cl. 277—38 **6 Claims**



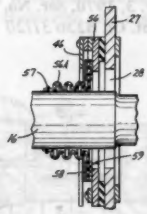
A water pump seal including a lip-type sealing member restrained in a sealing position to a containing case and engaging the outer periphery of a cylindrical face seal member for the purpose of providing a pressure balance seal by eliminating the communication of water pressure to the rear face of the face seal member. The face seal member is held concentric with a shaft to be received by the seal and restrained from rotation by a spring secured to the face seal member at one end and to the case at its other end. Such manner of rotation restraint and the use of a lip-type sealing member further contribute to increased seal life.

3,669,459
OSCILLATING SPINDLE SEAL

Miles M. Bass, Kalamazoo, Mich., assignor to Hammond Machinery Builders, Inc., Kalamazoo, Mich.

Filed Mar. 31, 1970, Ser. No. 24,188
Int. Cl. F16j *15/00*
U.S. Cl. 277—174 **11 Claims**

A sealing assembly, particularly adapted for use with an electrochemical grinding machine, for permitting relative radial oscillation and/or axial reciprocation between a spindle housing and a hood. The hood is provided with an elongated opening therein through which passes the spindle housing, the elongated opening permitting the spindle housing to radially oscillate. The seal assembly comprises a stationary seal means which is in sealing engagement with the hood and surrounds the opening therein. A movable seal means is in surrounding sealing engagement with the spindle housing.

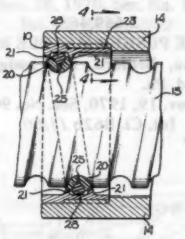


Said stationary and movable seal means are slidingly and sealingly interconnected.

3,669,460
SCREW SEAL

Paul V. Wysong, Northridge, Calif., assignor to Schrillo Company, Sepulveda, Calif.

Filed Feb. 22, 1971, Ser. No. 117,605
Int. Cl. F16j *15/16*
U.S. Cl. 277—24 **10 Claims**

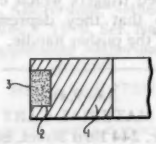


A screw seal for providing a dynamic seal between a screw and a nut is disclosed. The seal which may be coupled to a nut, is incorporated within a carrier disposed about the screw and includes a chipping surface for shipping away foreign matter on the screw, a wiping surface for wiping the screw and sealing member which forms a seal between the nut and screw.

3,669,461
PISTON RING

Shunji Togami, Zushi, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed May 19, 1970, Ser. No. 38,825
Claims priority, application Japan, May 20, 1969, 44/45818
Int. Cl. F16j *9/00*
U.S. Cl. 227—235 R **2 Claims**



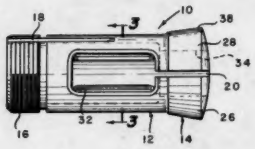
A cast iron piston ring which has an annular groove cut at the outer periphery and a stainless steel insert sprayed into the annular groove.

3,669,462

THREE AND FOUR LEAF MACHINE TOOL COLLETS

Hubert J. Parsons, Horseheads, N.Y., assignor to Hardinge Brothers Inc., Elmira, N.Y.

Filed Apr. 3, 1970, Ser. No. 25,456
Int. Cl. B23b *31/20*
U.S. Cl. 279—51 12 Claims



A machine tool collet of the three or four leaf type including a cylindrical body having a longitudinal axis, a collet head at the outer end of the body, a plurality of radial slots extending parallel to the longitudinal axis for dividing the body and the head into a plurality of arcuate segments, the slots having a narrow forward portion and an enlarged portion rearwardly of the forward portion, each of the arcuate segments adjacent the enlarged portion of the slots comprising an arcuate distance of approximately 50°. Alternatively, if the arcuate segments are machined to be substantially flat, then the degree of arc of the segments may be as much as approximately 70°.

3,669,463

CARRIAGE PUSHER HANDLE RELEASE

Alban M. Boudreau, Bedford, Pa., assignor to Hedstrom Company, Bedford, Pa.

Filed Nov. 19, 1970, Ser. No. 90,953
Int. Cl. B62b *11/00*
U.S. Cl. 280—47.37 6 Claims

The conventional telescoping pusher handle for a baby carriage slides in housings attached to the carriage frame. Spring-loaded pins are mounted on one or both legs of the pusher handle. These snap into properly placed openings in housings when the handle is fully extended. To collapse the handle, one presses these pins inward with his fingers so that they disengage from the registering openings in the housings, allowing the handle to slide downward. The present release employs saddle-shaped triggers which can be rocked easily by the operator so that they depress the pins, thereby facilitating release of the pusher handle.

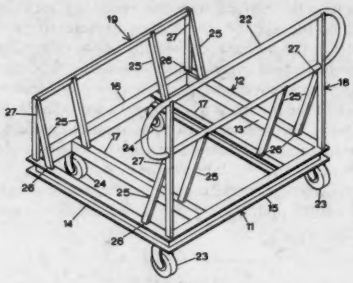
3,669,464

MATERIAL CART

Leonard J. Linzmeier, 244 Bird Street, Sun Prairie, Wis.

Filed Aug. 10, 1970, Ser. No. 62,436
Int. Cl. B62b *3/10*
U.S. Cl. 280—47.34 1 Claim

A material handling car that automatically aligns elongate material pieces that are dropped thereon. The cart has a substantially horizontal wheel-supported bed having end members connecting a pair of side members. Guide rails, that automatically align the material pieces dropped on the cart, are attached to the end members inwardly of the side members and extend upwardly and outwardly from their points of attachment.



3,669,465

DUAL WHEEL STEERING MEANS

Matthew Vacante, 500 Dawson Lane, Jericho, N.Y.

Filed Aug. 6, 1970, Ser. No. 61,685
Int. Cl. B62d *1/04*
U.S. Cl. 280—87 R 6 Claims

A dual hand wheel steering assembly is adapted to be substituted for the conventional steering wheel on vehicles. The assembly consists of left and right hand wheels and a gear box which is mounted on the existing steering shaft. Horn buttons are provided. An instrument panel and an air bag safety device may be mounted on the gear box between the hand wheels for the protection of the operator.

3,669,466

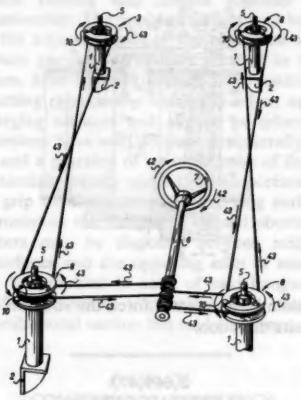
CABLE-STEERED VEHICLE HAVING A CABLE TENSIONING AND ACTUATING ASSEMBLY THEREFOR

William George Spence, 2375 Wilson Avenue, Apt. 8, Montreal 260, Quebec, Canada

Filed Dec. 21, 1970, Ser. No. 99,963
Int. Cl. B62d *1/00*
U.S. Cl. 280—91 11 Claims

A steering cable assembly adapted to tension and actuate a steering cable adapted to tension and actuate a steering cable in a cable-steered vehicle. A cable assembly of the above type which includes two spools to attach and wind the ends of the cable, a bevel gear coaxially secured at one end of each spool, the toothed faces of the bevel gears facing each other in spaced-apart relation, along a common steering axle, at least one of the two gears is rotatable around the common steering axle, a locking element is arranged to engage between the teeth of each gear to releasably lock the gears

together for concomitant rotation, and when disengaged, to allow relative rotation between the two gears and the attached spools upon insertion and rotation of a toothed tool in meshing engagement with both gears.

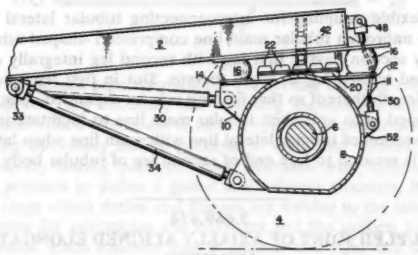


3,669,467

VEHICLE ELASTOMERIC SUSPENSION SYSTEM

Dennis L. Dunlap, Kansas City, Mo., and Darrel L. Bryan, Overland Park, Kans., assignors to Pacific Car and Foundry Company, Bellevue, Wash.

Filed Feb. 26, 1970, Ser. No. 50,042
Int. Cl. B60g 11/22
U.S. Cl. 280—124 **9 Claims**



An elastomeric rear axle suspension system for a vehicle consisting of spherical springs of an elastomeric material and elastomeric support pads, the spherical springs and support pads being in position between a support mounted to the axle and the vehicle frame. The spherical springs and support pads contact the frame when the vehicle is loaded, and the spherical springs lift the frame away from the support pads. Rebound cables control excessive motion which would separate the axle from the frame.

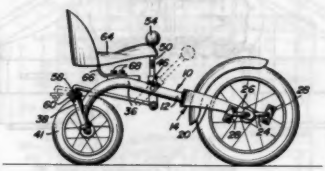
3,669,468

WHEELED TOY

Everett W. Rich, 424 West Pardee Lane, Stockton, Calif.

Filed Jan. 30, 1970, Ser. No. 7,096
Int. Cl. B62k 9/00, 21/00
U.S. Cl. 280—267 **3 Claims**

A three-wheeled vehicle including an occupant supporting body having front and rear ends with a center front wheel journaled from the front end of the body for rotation about a fixed horizontal transverse axis and having foot pedals operatively associated therewith for driving the front wheel. A pair of opposite side rear wheels are journaled from opposite ends of a horizontal rear transverse axle assembly and the axle assembly is oscillatably supported from the rear of the body for angular displacement about a rearwardly and upwardly inclined axis. Further, the body includes a seat structure for the occupant of the vehicle and controls for oscillating the rear axle assembly are supported from the body for actuation by an occupant seated on the seat structure.

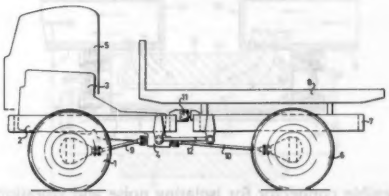


3,669,469

ARTICULATED VEHICLE FRAME

Nils Magnus Hartelius, Gothenburg, Sweden, assignor to Aktiebolaget Volvo, Gothenburg, Sweden

Filed Dec. 28, 1970, Ser. No. 101,512
Int. Cl. B62d 53/02
U.S. Cl. 280—492 **5 Claims**



An articulated vehicle frame, preferably for cross country vehicles, comprising an articulation mounted between the front and rear wheel axles and dividing the frame in two portions, in which the articulation consists of a universal joint mounted in the longitudinal vertical plane of symmetry of the frame and hingedly connecting the two frame portions with each other and two links mounted on both sides of the universal joint in the longitudinal direction of the frame, which links are rotatably connected with the frame portions in a plane situated below a horizontal plane through the universal joint.

3,669,470

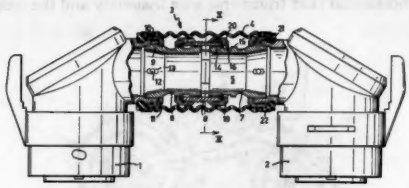
CONNECTOR ENCLOSURE

Johannis M. Deurloo, Enkhuizen, Netherlands, assignor to Draka Kabel N.V., Amsterdam, Netherlands

Filed June 3, 1970, Ser. No. 43,117
Claims priority, application Netherlands, Aug. 12, 1969, 6912273
Int. Cl. F16l 27/00
U.S. Cl. 285—45 **3 Claims**

To connect two apparatuses a connector assembly is used comprising two connector units and a plurality of conductors, and to protect said conductors a connector enclosure is provided consisting of an inner member of non elastic material, which member is constructed with two articulate inner tubes adapted to be coupled with the said two connector-units and with an outer tube, which is coupled telescopi-

cally and rotatably about a limited angle with the coupling extremities of the inner tubes opposite the articulate extremities of said inner tubes; and as an outer enclosure a bellow or



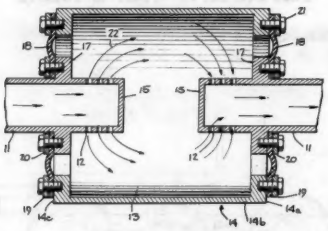
sleeve of elastic material is used, said connector assembly permits a limited relative movement of the connector units, which is for an improved protection of the conductors against damage through imprudent use.

3,669,471

FLEXIBLE CONNECTING DEVICE

William H. Fetish, Jr., Saddle Brook, N.J., assignor to Uniroyal, Inc., New York, N.Y.

Filed May 19, 1970, Ser. No. 38,788
Int. Cl. F16l *11/12*
U.S. Cl. 285—49 **11 Claims**



A flexible connector for isolating noise and vibration in a pipeline. The connector includes a casing having a pair of openings at opposite ends thereof which define an internal chamber. A pair of axially spaced tubular members extend into the internal chamber through the openings and are connected to corresponding portions of the pipeline. A diaphragm surrounds each of the tubular members for flexibly fastening and sealing each of the tubular members to the casing.

The foregoing abstract is not intended to be limiting as to the scope of the invention in any way.

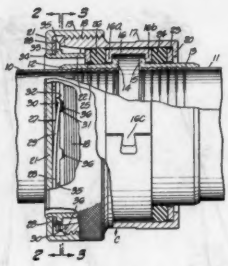
3,669,472

COUPLING DEVICE WITH SPRING LOCKING DETENT MEANS

Clarence A. Nadsady, Downey, Calif., assignor to E. B. Wiggins, Inc., Los Angeles, Calif.

Filed Feb. 3, 1971, Ser. No. 112,126
Int. Cl. F16l *15/00*
U.S. Cl. 285—87 **10 Claims**

A detachable coupling device for joining pipe and tubing members in end-to-end relation and providing an hermetic seal, comprising an axially contractible two-part coupling structure in which the parts are rotatably united by screw thread means and are operable to compress enclosed O-ring sealing members with respect to the connected tubing. Tightening of the coupling parts is readily accomplished, but untightening and particularly accidental loosening is restrained by unique releasable detent means in which spring fingers carried by one of the coupling parts engage indentations or notches on the other coupling part in such a manner as to favor relative rotation of the parts in one direction



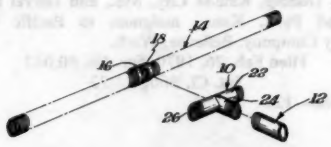
while restraining with greater force the rotation of the parts in the opposite direction.

3,669,473

FLEXIBLE COUPLING

Ronald C. Martin, Waterville, Ohio, and Marty E. Sixt, Iowa City, Iowa, assignors to Advance Drainage Systems, Inc., Waterville, Ohio

Filed Dec. 11, 1970, Ser. No. 97,149
Int. Cl. F16l *41/06*
U.S. Cl. 285—197 **8 Claims**



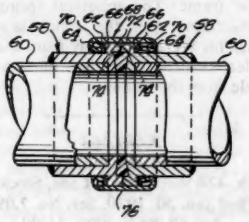
Flexible coupling for interconnecting tubular lateral line with unbroken tubular main line comprises T-shaped tubular body section having first leg with second leg integrally connected to first leg at angle thereto. Slot in first leg extends full length thereof so that first leg may be expanded open and snapped onto unbroken tubular main line to facilitate interconnection of tubular lateral line with main line when lateral line is secured to free end of second leg of tubular body section.

3,669,474

COUPLED JOINT OF AXIALLY ALIGNED ELONGATED MEMBERS

Richard M. Bode, 7403 Fifth Avenue, Kenosha, Wis.

Filed Aug. 26, 1970, Ser. No. 66,928
Int. Cl. F16l *19/02*
U.S. Cl. 285—365 **16 Claims**



A coupled joint of axially aligned elongated members, which members may be tubular members or solid rods, or

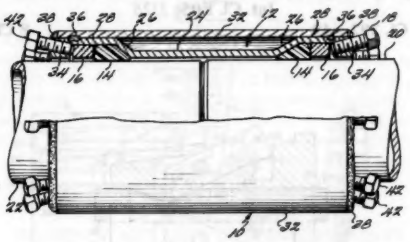
may have rectangular transverse cross sections which are solid or hollow, has opposed flanges on the adjacent ends of the elongated members and a plurality of clamping bands or jaw members holding said flanges together in aligned abutting relationship. The opposed flanges may be formed integrally at the adjacent ends of the elongated members or may constitute portions of ferrules secured to the ends of said members. Said opposed flanges have squared end surfaces in abutting relationship with each other, opposed outwardly diverging surfaces and aligned peripheral surfaces. The jaw members have web portions peripherally embracing the flanges and a plurality of opposed pairs of fingers which extend substantially axially under the web portions and exert a vise-like grip on the outwardly diverging surfaces of the flanges to maintain the flanges in aligned abutting relationship. Washers may be disposed between said outwardly diverging surfaces and the opposing ends of said fingers. A recess may be provided in each of said flanges to form a chamber of substantially trapezoidal axial section, and a gasket of similar axial section fills said chamber.

3,669,475

COMPRESSION COUPLINGS

Lawrence F. Luckenbill, and Frank C. Hackman, both of Decatur, Ill., assignors to Mueller Co., Decatur, Ill.

Filed May 22, 1970, Ser. No. 39,706
Int. Cl. F16l *21/02*
U.S. Cl. 285—348 **1 Claim**



A fabricated pipe coupling for connecting meeting ends of a pair of pipe sections, the coupling including a tubular member rolled from steel to form a cylindrical center portion having outwardly flaring portions at each end thereof, the outwardly flaring portions being provided with cylindrical end portions to define a gasket and follower channels. Rigid end rings which define end flanges are welded to the tubular member for entrapping the followers and the gaskets in the channels. Each follower ring is endless and rigid and is inserted into the chamber prior to enclosing the chamber with the end ring. The end rings have a plurality of circumferentially spaced thread holes for receiving set screws, the set screws being utilized to advance the follower rings against the gaskets to cause the gaskets to deform and provide seals with the end of the pipe sections. A further reinforcing sleeve member is provided about the tubular member and is welded to the tubular member and to the end rings.

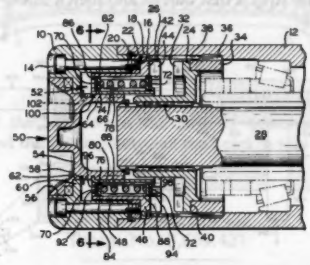
3,669,476

SELECTIVE FRONT WHEEL DRIVE HUB

Denney R. Wilson, Ossian, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed June 25, 1971, Ser. No. 156,631
Int. Cl. F16d *1/06*
U.S. Cl. 287—53 R **10 Claims**

A drive hub is provided having an inner actuating sleeve operatively connected to and selectively controlled by a manual external actuator and wherein a coupling connection is provided between the actuating sleeve and a cooperating outer clutch gear, so that when the manual actuator is operated in either direction, the actuating sleeve will move axially relative to the clutch gear to apply a preload thereon. The coupling connection includes a pair of spaced tabbed



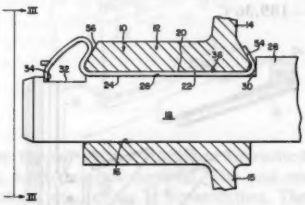
guide washers slidably supported between the actuating sleeve and the clutch gear and a coil spring interposed between the washers.

3,669,477

HUB AND SHAFT SECUREMENT MEANS

Michael D. Ulich, South Wellfleet, Mass., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 21, 1970, Ser. No. 65,985
Int. Cl. F16d *1/06*
U.S. Cl. 287—52.07 **3 Claims**



A hub and shaft securement arrangement is provided in which a spring clip having a loop portion and a tongue portion is arranged with an extension thereof between the loop and tongue portions disposed within a hub so as to be squeeze between flattened portions on it and an inserted shaft and with the tongue end in compressing relationship relative to the hub and the loop portion compressingly engaged between the other termination of the hub and a shoulder formed by a cross groove in the shaft. This clip arrangement, then, provides a securement means which may mount a fan hub on either end of a double shafted motor, and yet still may secure the hub to the shaft. It also provides a securement means which eliminates close tolerance requirements between various faces and shoulders on the hub and shaft.

3,669,478

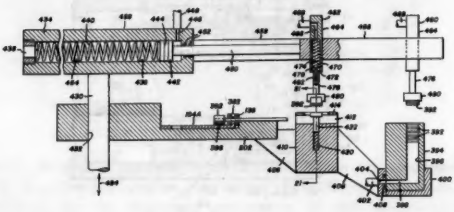
MACHINE AND PROCESS FOR SEMICONDUCTOR DEVICE ASSEMBLY

Richard J. Desmond, North Syracuse; Edward J. Fronczek, Auburn, and John J. McCarthy, Port Byron, all of N.Y., assignors to General Electric Company

Filed May 4, 1970, Ser. No. 34,042
Int. Cl. B23k *1/20*
U.S. Cl. 228—5 **13 Claims**

A machine and process are disclosed for assembling a plurality of semiconductor devices having heat sinks initially

united in a common strip. A track is provided for allowing a heat sink strip to be sequentially transported through a plurality of assembly stations. A magazine is provided for dispensing heat sink strips to the track. The strip is advanced by fingers engaging regularly recurring apertures in the strip. The heat sink strip is first burred and then a solder preform is



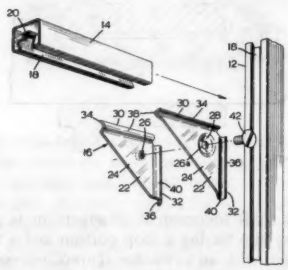
stamped onto the strip at spaced intervals overlying the burrs. Lead carrying headers are fed into association with spaced foot portions of the strip. A dispenser feeds a solder ball to a window in each header. A forming and pick up mechanism positions sub-assemblies including semiconductive elements and internal connectors on the heat sink strip overlying the solder preforms.

3,669,479

STRUCTURAL CONNECTIONS

Harold A. Payne, 252 Bering Avenue, Toronto, 18 Ontario, Canada

Filed Nov. 13, 1970, Ser. No. 89,314
Int. Cl. F16b *7/04*
U.S. Cl. 287—189.36 C **8 Claims**



A device adapted for connection to a structural element of the type having a longitudinally extending channel formed therein. The device may be used for connecting two or more such structural elements to one another. The device preferably consists of two plate elements which are folded preferably adjacent to side edges to form two pairs of outwardly directed lugs and two pairs of inwardly directed ridges. The device includes clamping means which may be in the form of a clamping screw for pulling the main body portions of the plates together to cause the plates to pivot about the ridges to force the lug members away from one another into locking engagement within the channel structure of one structural element.

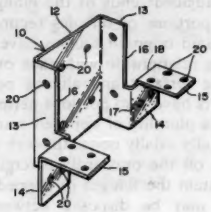
3,669,480

GUARD RAIL DEMOUNTABLE SOCKET

James E. Fugate, 9740 S.W. 167th Street, Perrine, Fla.

Filed May 3, 1971, Ser. No. 139,654
Int. Cl. F16b *21/00*
U.S. Cl. 287—20.95 **2 Claims**

A demountable socket for receiving guard rail posts having a front wall and a pair of side walls forming an opening at both top and bottom portion for extending a post therethrough with a plurality of tabs mounted on each of the side walls, one of each of the tabs lying in a plane parallel



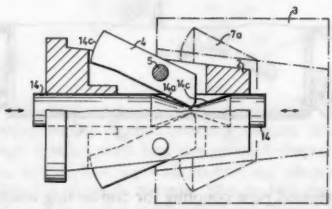
with the front wall and the other of the tabs extending at right angle to the first named tabs with openings in the tabs for fastening the socket to a form for pouring concrete.

3,669,481

COUPLING OR LOCKING MEANS

Hermann Gustav Adolf Bergmann, Stocksund, Sweden, assignor to Liber Shovel Co. A.G., Zug, Switzerland

Filed May 23, 1969, Ser. No. 827,259
Claims priority, application Sweden, May 27, 1968, 7065/68
Int. Cl. E05c *3/28*
U.S. Cl. 292—49 **8 Claims**



In a means for coupling or locking two parts together, one part is provided with a preferably conical stud which can be inserted against a stop in a conical recess in the other part. One or preferably two or more spring actuated latching members pivotal about shafts at right angles to the axial direction of the stud are free to enter an enlarged section of the recess so that the latching members like barbs of a hook or harpoon prevent the stud from returning. An operating device rotatable or axially displaceable within the stud and actuated from one or both ends thereof effects the return of the latching members. The means may be used for coupling together two machine parts, e.g. in a chuck or the like, as a hose coupling, in a safety lock system for vehicles etc.

3,669,482

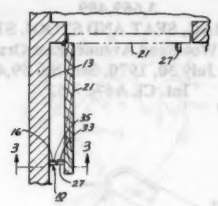
CLOSURE FASTENER

Dominick J. DeFazio, 8022 Glenwood Avenue, Youngstown, Ohio

Filed May 15, 1969, Ser. No. 824,956
Int. Cl. E05c *19/06*
U.S. Cl. 292—80 **2 Claims**

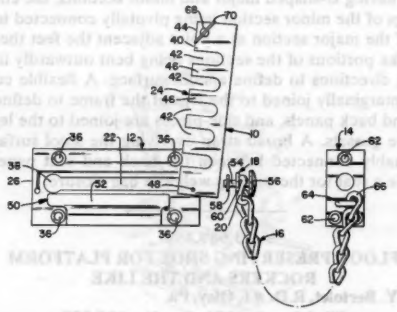
This invention relates to a door check or closure fastener which is operable to retain a door positively in open position in a primary locking position and upon further opening of the door operable to automatically release the closure fastener to

permit closing of the door, all of the above operations being accomplished without manual intervention with the closure



fastener other than manually opening and closing of the door.

3,669,483
CHAIN DOOR LATCH
Fred A. Trachsler, 617 Tenth Avenue, San Francisco, Calif.
Filed Dec. 14, 1970, Ser. No. 97,869
Int. Cl. E05c *17/36*
U.S. Cl. 292—264 **11 Claims**



A chain latch for a swingable door wherein a first member adapted to be secured to one side of a door has a slot for receiving a stud on one end of a flexible chain whose opposite end is secured to a second member adapted to be secured to the jamb of the door. A rigid strip having a plurality of spaced teeth is shiftably mounted on the first member and is movable into a position with the spaces between the teeth in alignment with the slot, whereby the stud, when disposed in the slot, will be releasably held in a fixed location therein. Means is provided to releasably secure the strip to the first member.

3,669,484
BUMPER FOR MOTOR VEHICLES
Bernhard Bernitz, Hannover, Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany
Filed Dec. 17, 1969, Ser. No. 885,679
Claims priority, application Germany, Oct. 19, 1968, P 18 15 655.3
Int. Cl. B60r *19/08*
U.S. Cl. 293—71 R **9 Claims**

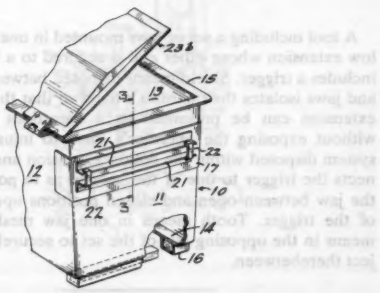
A bumper structure with attached strip of yieldable resilient material such as rubber, for motor vehicles in which the strip is stretched in longitudinal direction while engaging the bumper at least over portions thereof and being connected to said bumper by screws, hooks, or the like, extending through holes in said bumper, the total of the length of said screws, hooks, or the like, being at least 1.5 times longer than the difference between the spacing of said screws,

hooks, or the like, when the strip is detached from the bumper and the spacing between the holes in said bumper.

ERRATUM

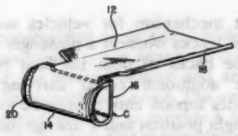
For Class 294—19 see:
Patent No. 3,669,427

3,669,485
REFUSE CONTAINER
David T. Stihler, 4602 Sylvania Avenue, Toledo, Ohio
Filed Jan. 11, 1971, Ser. No. 105,420
Int. Cl. B65f *1/12*
U.S. Cl. 294—73 **3 Claims**



An open topped refuse container fabricated from fiber reinforced, hard resinous material. The end and side walls and the bottom are unitary in construction. The walls taper outwardly so the open top is larger than the bottom and there is an outwardly extending lip formed at the upper edge of the side and end walls. The end walls have extra reinforcing layers. Two vertically spaced channels are removably bolted at the outside of the reinforced end walls for receiving the tines of a lifting fork. Retaining straps extend vertically across between the channels. The container has a lid that is hinged to the lip at the front or back.

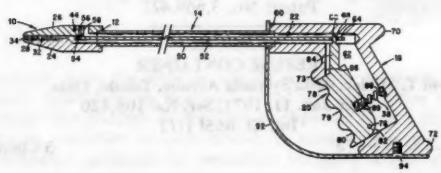
3,669,486
CORNER CLIP AND BALE LIFTING METHOD
James A. Pasic, Aberdeen, Wash., assignor to Ovalstrapping, Inc., Hoquaim, Wash.
Continuation of application Ser. No. 836,281, June 25, 1969, now abandoned. This application Aug. 17, 1970, Ser. No. 64,610
Int. Cl. B66c *1/12*
U.S. Cl. 294—74 **5 Claims**



A corner clip is formed of a single strip of metal into a horizontal leg which fits beneath the top run of a strap, a ver-

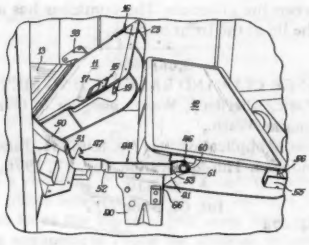
tical leg, and a loop which fits beneath the side run of a strap. The loop and horizontal leg have lateral upturned ends for confining the strap in the clip. In the method the strap is spaced from the side of the bale of the loop of the clip and the lifting force is applied at each corner at an angle of substantially 45°.

3,669,487
TOOL
Lonnie D. Roberts, 4408 O'Hara Drive, Knoxville, Tenn., and Claude A. Plummer, Route 1, Box 114, Hieskell, Tenn.
Filed Nov. 9, 1970, Ser. No. 87,660
Int. Cl. B25b *5/04*
U.S. Cl. 294—104 **6 Claims**



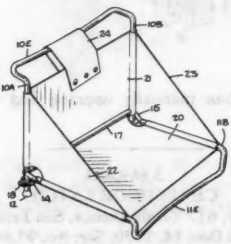
A tool including a set of jaws mounted in one end of a hollow extension whose other end is secured to a handle which includes a trigger. Shield means disposed between the handle and jaws isolates the operator's hand so that the jaws on the extension can be presented to a hazardous work region without exposing the operator's hand to injury. A linkage system disposed within the hollow extension and handle connects the trigger to one of the jaws so as to positively move the jaw between open and closed positions upon movement of the trigger. Tooth means in one jaw mesh with cavity means in the opposing jaw of the set to securely grasp a object therebetween.

3,669,488
FOLD-DOWN SEAT MECHANISM FOR VEHICLES
Charles Derrickson, Jr., and Robert A. Rodgers, both of Fort Wayne, Ind., assignors to International Harvester Company, Chicago, Ill.
Filed Aug. 21, 1970, Ser. No. 65,838
Int. Cl. B60n *1/10*
U.S. Cl. 296—66 **16 Claims**



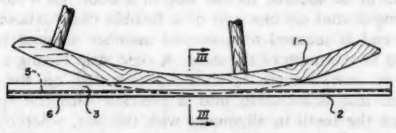
A folding seat mechanism for vehicles such as station wagons and panel trucks wherein a passenger seat is folded down so that the backs of both the seat back and seat cushion provide additional cargo carrying space. The mechanism includes torsion bars connected to bias the seat back into an upright position and a linkage mechanism joining the seat back and cushion and effective to transmit the folding motion of one into the folding motion of the other. The mechanism also includes latching mechanisms effective to hold the seat back and cushion in either an upright position or in a completely fold-down position, and suitable built-in load carrying supports.

3,669,489
COMBINED BAG, SEAT AND STOOL STRUCTURE
Thomas Rock, 39 Woodland Avenue, East Orange, N.J.
Filed July 30, 1970, Ser. No. 59,414
Int. Cl. A47c *7/62*
U.S. Cl. 297—217 **4 Claims**



A foldable multi-purpose structure adapted in the folded state to serve as a carry-bag and a two-legged stool, and in the unfolded state as a backed seat. The structure includes a frame having U-shaped major and minor sections, the ends of the legs of the minor section being pivotally connected to the legs of the major section at a point adjacent the feet thereof, the yoke portions of the sections being bent outwardly in opposing directions to define a stool surface. A flexible covering is marginally joined to the legs of the frame to define the seat and back panels, and side-pieces are joined to the legs to provide gussets. A broad strap overlying the stool surface is detachably connected between the back and seat panels to provide a seat for the stool as well as a bag closure.

3,669,490
FLOOR PRESERVING SHOE FOR PLATFORM ROCKERS AND THE LIKE
Doris Y. Bertolet, R.D. #1, Oley, Pa.
Filed Jan. 8, 1971, Ser. No. 105,029
Int. Cl. A47c *3/02*
U.S. Cl. 297—272 **5 Claims**

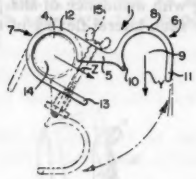


This invention relates to a floor preserving shoe of resilient material and of substantially channel-shape for closely fitting about the foot portion of a piece of furniture, such as a platform rocker. The bottom surface of the shoe is preferably concave across the width so that the weight of the furniture will flatten the curvature and in so doing the sidewalls of the shoe will more firmly engage said foot portion.

3,669,491
GANGING DEVICE
Ernest A. Weslock, Sturgis, Mich., assignor to The Sturgis Company, Sturgis, Mich.
Filed June 8, 1970, Ser. No. 44,361
Int. Cl. A47c *1/124*
U.S. Cl. 297—248 **6 Claims**

A chair ganging device includes an elongated member having an attaching element pivotally connected to a tubular

member of one chair. A resilient clamp element adjacent the attaching element includes a snap cavity adapted to



removably engage a similar juxtaposed tubular member of an adjacent chair.

3,669,492

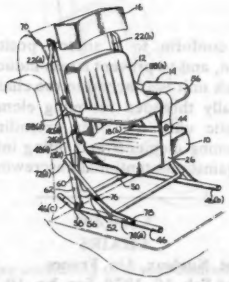
RECLINING CAR SEAT

Arnold E. Peterson, Glendale, Calif., assignor to Peterson Baby Products, Hollywood, Calif.

Filed May 27, 1971, Ser. No. 147,540

Int. Cl. A47d 1/10

U.S. Cl. 297—253 **8 Claims**



An infant car seat with its own headrest so constructed that it is pivoted from the upper end and is capable of being moved to a reclining position from the standard sitting position without interfering with the top of the automobile seat on which it is mounted or the headrest associated with such an automobile seat. The invented infant seat is also constructed to provide a rugged and safe infant car seat which because of the unique pivoting structure can be compactly folded for storage, handling or shipping.

3,669,493

CHAIR

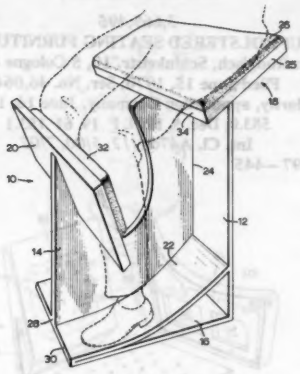
J. Harding Vowles, 106 Donlea Drive, Toronto, 17 Ontario, Canada

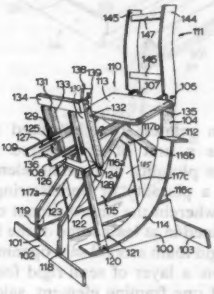
Filed Nov. 3, 1970, Ser. No. 86,408

Int. Cl. A47c 7/50, 7/00

U.S. Cl. 297—429 **8 Claims**

A chair adapted to support a person so that his weight is distributed between his posterior and his knees. The chair includes a knee support and a seat support sloping generally downward toward the knee support. The sloping seat and the knee support co-operate to shift a portion of the person's weight onto the knee support so that the weight borne by the person's posterior is reduced, thus permitting use of the chair over an extended period of time without the person developing a pain in his posterior. An arcuate, lateral foot rest per-





mits the person to place his feet in a number of comfortable positions.

3,669,494

MODULAR FURNITURE PIECES

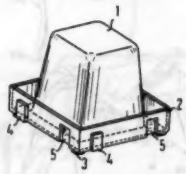
Hartmut H. Lohmeyer, Schleissheimer Strasse 189, 8 Munich, 13, Germany

Filed Apr. 9, 1970, Ser. No. 26,975

Claims priority, application Germany, Apr. 11, 1969, P 19 18 540.1

Int. Cl. A47c 7/00

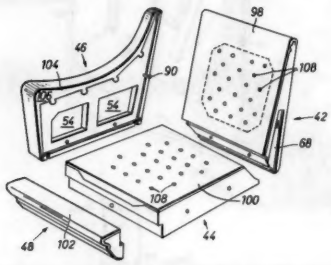
U.S. Cl. 297—440 **23 Claims**



A unit for constructing modularized body supporting furniture pieces comprising a box having an outwardly upturned trough around the bottom portion and an upholstered cap covering the upper portion thereof. The upholstered cap can be of such configuration as to provide a seating surface on the top, or it can be such that it provides a body supporting surface, such as a backrest, on the side thereof. The trough includes means for aligning adjacent units in the course of constructing a furniture piece with a plurality of units. U-

shaped clips are used to attach adjacent units together. By combining seat units and support units, various pieces of furniture can be constructed.

3,669,495
UPHOLSTERED SEATING FURNITURE
Edgar Von Rudgisch, Schinkelstr. 10, 5 Cologne 41, Germany
Filed June 15, 1970, Ser. No. 46,064
Claims priority, application Germany, June 16, 1969, P 19 30 583.0; Dec. 5, 1969, P 19 61 153.1
Int. Cl. A47c 1/12, 5/00, 7/02
U.S. Cl. 297—445 **10 Claims**

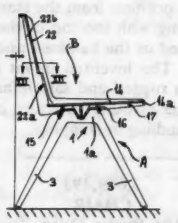


This invention relates to upholstered seating furniture which comprises a unit of upholstered seating furniture which includes a plurality of framing elements made from rigid foam and a plurality of upholstering elements made from soft foam wherein the improvement comprises at least one opening defined in at least some of the framing elements, the surface of rigid foam around said opening being in a compressed condition, a layer of semi-rigid foam at least partly covering at least one framing element, said semi-rigid foam serving as both a base for the seat and back and as a resilient base for soft foam in other parts of said unit.

3,669,496
CHAIR AND SEAT AND BACK UNIT THEREFOR
William A. Chisholm, Temple, Tex., assignor to American Desk Manufacturing Company, Temple, Tex.
Filed Dec. 3, 1970, Ser. No. 94,725
Int. Cl. A47c 4/02, 7/00
U.S. Cl. 297—445 **33 Claims**

A chair comprises a frame, which may be somewhat flexible, and a unitary blow-molded plastic seat and back unit including a hollow, relatively non-bendable seat portion, a hollow, relatively non-bendable back portion, and a relatively bendable portion intervening between and connecting the seat and back portions. The seat and back unit is blow-molded in substantially, i.e. generally, flat, over-all condition, in which it may be stored and shipped, and is conditioned for mounting on the chair frame by bending about the intervening connecting portion. The latter is formed to provide for controlled bending with avoidance of sharp localized bends, and to provide for such lateral flexing of the seat and back portions as to conform to a sitter's position, such as a slouched position, and to prevent stress-induced edge cracks. The seat and back unit is attached to the chair frame by bolts engaging internally threaded fastening elements molded in situ in the plastic unit, the bolts extending through and beyond the fastening elements and biting into the plastic to lock the bolts against unintentional unscrewing.

3,669,497
CHAIRS
Henry Massonnet, Nurieux, Ain, France
Filed Feb. 10, 1970, Ser. No. 10,176
Claims priority, application France, Feb. 17, 1969, 6903959
Int. Cl. A47c 1/12
U.S. Cl. 297—445 **2 Claims**



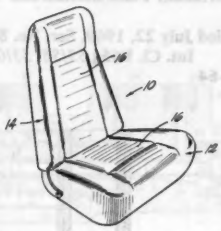
A sectionalized chair comprising a stand including two pairs of legs joined by a cross bar and a unit comprising an integral back and seat, the cross bar having inclined and divergent rear and front faces and the lower surface of the seat being provided with formations for centering the seat relative to and attaching it to the inclined faces and the lateral or side edges of the seat fitting between the upper ends of the two pairs of legs.

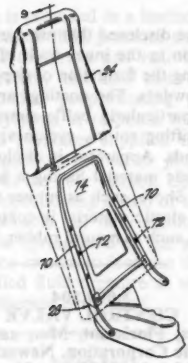
3,669,498

SEAT STRUCTURE

John S. Meyers, Ann Arbor, and Nicholas Wolofski, Whitmore Lake, both of Mich., assignors to Hoover Ball and Bearing Company, Saline, Mich.

Filed Aug. 3, 1970, Ser. No. 60,317
Int. Cl. A47c *7/20, 7/14;* B60n *1/06*
U.S. Cl. 297—452 **14 Claims**





A seat structure consisting of a seat cushion unit and a seat back unit wherein each of said units comprises a foam body and a spring assembly embedded in the body. The seating units are mounted on a frame and each spring assembly includes a plurality of spaced linear springs which project from the foam body and are attached to the frame so as to mount the seating unit on the frame. In the seating cushion unit, the linear springs, border wire and bolster wires cooperate to provide desired seating resilience and the spring end portions are snapped over upstruck tabs formed on the frame. In the seating back unit, the spring end portions extend through mounting slots in the frame. In both units, the springs are connected by bolster wires and the foam bodies are formed with grooves aligned with the bolster wires to enable mounting of the seat structure covering on the foam bodies by attachment to the bolster wires.

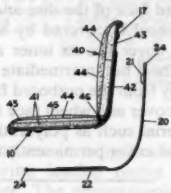
3,669,499

CHAIR

Frans Semplonius, Kentwood, and Stephen B. Kolk, Grand Rapids, both of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed Dec. 30, 1970, Ser. No. 102,592
Int. Cl. A47c *7/00, 7/02*
U.S. Cl. 297—455 **18 Claims**

The specification discloses a chair whose structural strength is derived from a molded, high-impact polystyrene structural shell. The face of this shell is covered with suitable cushioning and upholstery and arms may be provided if desired. This structural shell is then joined to a decorative, molded polypropylene trim shell which covers the rear of the structural shell and which includes a recessed portion to accommodate the seat supporting pan of a chair base which is secured to the structural shell, through the trim shell.

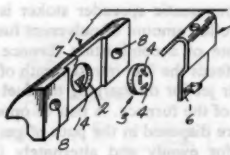


3,669,500

BALANCE WEIGHT FOR VEHICLE WHEELS

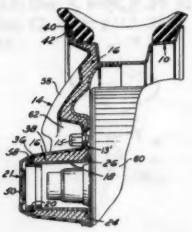
Kurt Hans Dietrich Ende, Onstmettingen, Wurttemberg, Germany, assignor to Dionys Hofmann, Maschinenfabrik GmbH, Onstmettingen, (Wurttemberg), Germany

Filed Dec. 23, 1969, Ser. No. 887,794
Claims priority, application Germany, Dec. 23, 1968, P 18 16 669.3
Int. Cl. B60b *13/00*
U.S. Cl. 301—5 B **3 Claims**



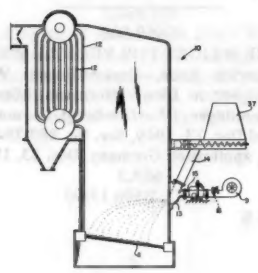
A balance weight with a separate and adjustable holding clip for balancing vehicle wheels. The balance weight is comprised of a balance weight piece and an adjustable holding clip which is interconnected to the balance weight piece.

3,669,501
VEHICLE WHEEL CONSTRUCTION
Robert J. Derleth, Lansing, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.
Continuation of application Ser. No. 735,157, June 6, 1968, now abandoned. This application Mar. 3, 1970, Ser. No. 16,254
Int. Cl. B60b *3/00, 7/00*
U.S. Cl. 301—37 R **18 Claims**



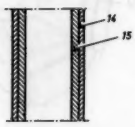
A vehicle disc wheel construction wherein at least a portion of the outboard face of the disc and/or rim of a conventional steel disc wheel is covered by an ornamental plastic wheel cover. The cover has its inner and outer margins in contact with the wheel but intermediate its margins the cover is spaced outwardly from the outboard face of the wheel. The void between the cover and wheel face is filled by a low density adhesive material such as polyurethane foam which adherently secures the cover permanently to the wheel.

3,669,502
PNEUMATIC SPREADER STOKER
Marvin J. Leman, Shelton, Wash., assignor to Simpson Timber Company, Seattle, Wash.
Filed Jan. 5, 1971, Ser. No. 104,002
Int. Cl. F23k *3/02*
U.S. Cl. 302—19 **9 Claims**



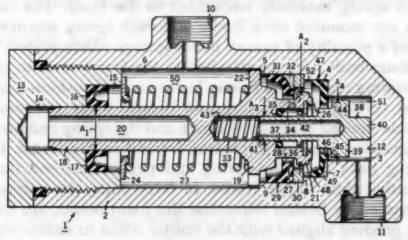
An improved pneumatic spreader stoker is disclosed for delivering a controlled amount of pulverent fuel at a uniform rate over the grate of a combustion furnace. Fuel feeding means uniformly feeds the fuel into the path of gas flow from a high velocity air jet for discharging the fuel into the combustion chamber of the furnace. A pair of opposed, powered rotary dampers are disposed in the path of gas flow ahead of the fuel infeed for evenly and alternately increasing and decreasing the quantity and pressure of gas delivering the fuel to the combustion chamber. A bypass conduit having air flow control means therein bypasses the rotary dampers and allows a minimum of gas flow to the combustion chamber at all times. The fuel feeding means comprises a pair of rotary screw conveyors preferably operated 90° to 180° out of phase with one another and disposed in side-by-side relation for delivering fuel from an infeed end to a discharge end. The flights of each of the screw conveyors are of increased pitch at the discharge end. Discharge openings in the screw housings below the flights of increased pitch of each screw conveyor diverge outwardly toward the discharge end and allow the fuel to flow uniformly by gravity into the path of gas flow for discharge into the combustion chamber of the furnace.

3,669,503
APPARATUS FOR HANDLING AND PROCESSING CURRENTS OF GAS-BORNE DRY SOFT POWDERS
Walter Zimmermann, Fallerslefenstrasse 11a, 89 Augsburg, Germany
Filed July 22, 1969, Ser. No. 843,450
Int. Cl. B65g *53/58, 53/04*
U.S. Cl. 302—64 **6 Claims**



Solid coatings are disclosed that are particularly useful for lining or application to the inner walls of processing equipment, for preventing the formation of deposits from currents of gas and soft powders. The coatings are especially suited for use in mills, particularly baffle rimmed grinding track mills, classifiers, sifting rotors, cyclones, and piping, more particularly in bends. Apparatus is disclosed provided with linings of soft elastic material having a hardness within the range of 10 to 50 Shore, such as rubber foam, and in some instances the soft elastic material is coated with a wear-resistant cover layer, such as natural rubber.

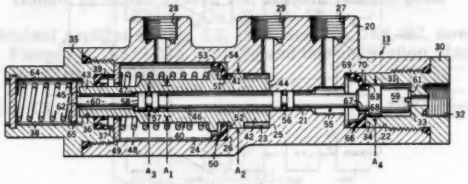
3,669,504
CONTROL VALVE
Stanley L. Stokes, Florissant, Mo., assignor to Wagner Electric Corporation, Newark, N.J.
Filed May 20, 1970, Ser. No. 39,069
Int. Cl. B60t *8/26, 11/34*
U.S. Cl. 303—6 C **18 Claims**



A control valve for use in a hydraulic brake system having a pressure source and a pressure responsive brake is provided with an aligned and interconnected pair of proportioning members in series flow relation which respectively proportion the fluid pressure supplied from said source to said brake. One of the proportioning members is actuated in response to supplied fluid pressure from the source in excess of a predetermined value to effect the application of proportionally reduced pressure to the brake, and the other of the proportioning members is aligned with and slidably received in the one proportioning member being actuated in response to the proportionally reduced pressure of another predetermined value

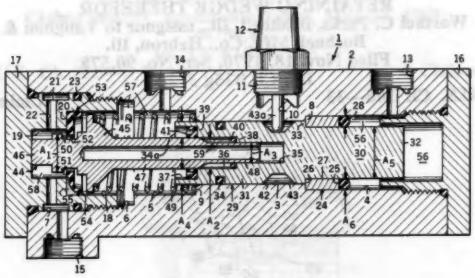
predeterminately in excess of the first named predetermined value to further proportionally reduce the pressure applied to said brake.

3,669,505
CONTROL VALVE AND SYSTEM
Edward J. Falk, St. Louis, Mo., assignor to Wagner Electric Corporation, Newark, N.J.
Filed Apr. 28, 1970, Ser. No. 32,584
Int. Cl. B60t *17/22, 8/26*
U.S. Cl. 303—6 C **15 Claims**



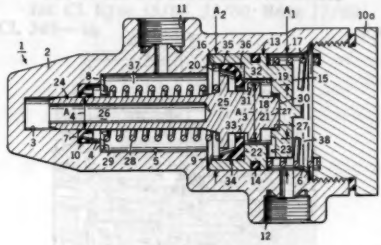
A control valve is provided in a horizontally split brake system having separate fluid pressure supplies wherein at least one brake of the front and rear brake sets is connected in each system, and said control valve includes separate spring-loaded proportioning pistons generally operable in said systems in response to a predetermined value of the fluid pressures supplied thereto from said fluid pressure supplies to thereafter proportion the fluid pressures applied to the rear brakes. Upon the failure of one system, the proportioning piston of the other or operating system is operable not only against its spring load but also against the spring load of the proportioning piston in the failed one system to increase the predetermined value of the supplied fluid pressure at which the proportioning actuation thereof is effected.

3,669,506
CONTROL VALVE
Joseph E. Papin and Stanley L. Stokes, Florissant, Mo., assignors to Wagner Electric Corporation, Newark, N.J.
Filed Apr. 28, 1970, Ser. No. 32,611
Int. Cl. B60t *17/22, 8/26*
U.S. Cl. 303—6 C **13 Claims**



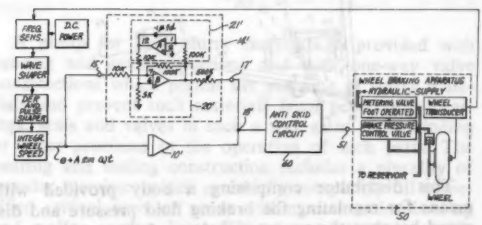
A control valve for use in a dual hydraulic brake system having a switch actuating piston movable to opposed translatory positions to energize a driver warning circuit upon the failure of one of the dual systems. A proportioning valve is also provided and is operable generally in response to supplied fluid pressure of one of the systems to effect a proportionally reduced application thereof through the control valve. The proportioning valve has one end thereof slidable in an end of the switch actuating piston, and upon the translatory movement of said switch actuating piston to one of its translated positions, an additional area on said proportioning valve is exposed to the supplied fluid pressure which thereafter effects a different proportionally reduced applied fluid pressure.

3,669,507
CONTROL VALVE
Stanley L. Stokes, Florissant, Mo., assignor to Wagner Electric Corporation, Newark, N.J.
Filed Apr. 28, 1970, Ser. No. 32,612
Int. Cl. B60t *8/26, 11/34*
U.S. Cl. 303—6 C **22 Claims**



A control valve for use in a hydraulic brake system is provided with a spring loaded piston which carries a proportioning member. The proportioning member is actuated in response to supplied fluid pressure in excess of a predetermined value to effect the application of a proportionally reduced fluid pressure through the control valve, and the piston is movable against its spring in response to another predetermined value in excess of the first named predetermined value acting thereon to increase the applied fluid pressure. The actuation of the proportioning member is thereafter resumed in response to a third predetermined value predeterminately in excess of the other predetermined value of the supplied fluid pressure acting thereon to further effect proportionally reduced increases in the applied fluid pressure.

3,669,508
WHEELSPEED INFORMATION SIGNAL PROCESSING SYSTEM
Narinder S. Attri, 11901 SE. 16th St., Renton, Wash. 98055
Filed June 8, 1970, Ser. No. 44,296
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 R **12 Claims**



A braking system which includes means for generating signals having predefined relationships with respect to wheelspeed information signals having undesired frequency

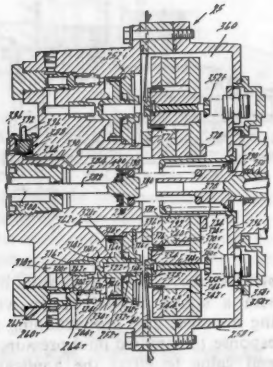
components. The error signal in an anti-skid system is effectively differentiated in a circuit which provides a positive sinusoidal signal at gear (or landing gear truck) frequency which is utilized in the wheelspeed information signal processing system to cancel an undesired gear walk generated negative sinusoidal signal component also at gear frequency which is superimposed upon the true wheelspeed information signals.

3,669,509

CONTROLLER FOR A SKID CONTROL SYSTEM

Malcolm D. Jones, Belleville, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Aug. 3, 1970, Ser. No. 60,300
Int. Cl. B60t 8/08; F17d 1/14
U.S. Cl. 303—21 F **19 Claims**



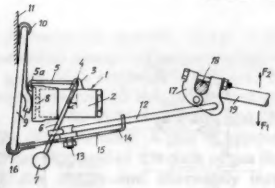
A hydraulic brake controller for a skid control system in which the controller uses hydraulic amplification and response generally proportionally to the magnitude of an error signal.

3,669,510

BRAKING PRESSURE DISTRIBUTING DEVICES

Michel Guettier, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt, and Automobiles Peugeot, Paris, France

Filed Dec. 17, 1969, Ser. No. 885,690
Claims priority, application France, Dec. 23, 1968, 180,046
Int. Cl. B60t 8/18
U.S. Cl. 303—22 R **1 Claim**



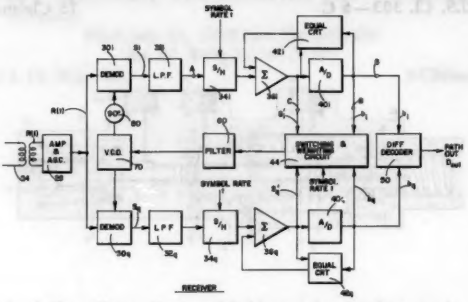
This distributor comprising a body provided with means for regulating the braking fluid pressure and disposed between the master-cylinder and the rear brakes of the vehicle, has a pivot pin carried on said body and rotatably rigid with a pair of arms of which one is in temporary contact with the front face of the control piston of the device, the other arm carrying an inertia weight.

3,669,511

SYSTEM FOR PHASE LOCKING ON A VIRTUAL CARRIER RECEIVED BY AN ASYMMETRICAL RECEIVER

David M. Motley, Santa Ana, and Naif D. Salman, Orange, Calif., assignors to North American Rockwell Corporation

Filed Sept. 17, 1970, Ser. No. 72,949
Int. Cl. H04b 1/30
U.S. Cl. 325—329 **4 Claims**



The present invention is directed to a phase-lock system which can derive a demodulating carrier reference signal for use in a suppressed carrier quadrature, amplitude modulating digital data transmission system which does not require the transmission of a low level carrier or pilot tones.

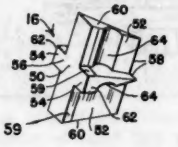
The system operates by multiplying the equalized received cross coupled signal in each channel by a specified function of the decoded *n*-level data signal of both channels and subtracting the products and dividing the results by the error signal coefficient to arrive at an error signal which is proportional to the phase error between the demodulating carrier reference signal and the suppressed transmitting carrier. The derived error signal can be made independent of data signal level values and the received signal levels even in the presence of severe intersymbol interference and cross coupled terms. The derived phase error signal is then fed back to a variable oscillator providing the demodulating carrier reference signal to change the phase of the reference signal so as to reduce the error signal towards zero.

3,669,512

IMPACT TOOL AND COMPOUND HANDLE-RETAINING WEDGE THEREFOR

Worthel C. Parks, Bushnell, Ill., assignor to Vaughan & Bushnell Mfg. Co., Hebron, Ill.

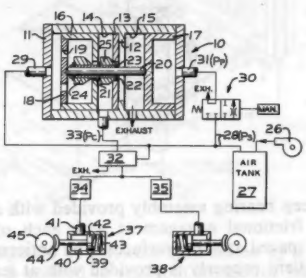
Filed Nov. 18, 1970, Ser. No. 90,578
Int. Cl. B25g 3/28
U.S. Cl. 306—33 **1 Claim**



A compound wedge adapted to be pressed into the conformably slotted distal end of a fresh wooden impact tool handle in order to spread such end and compress the wood thereof outwardly against the walls of the eye in the head of the impact tool and thus permanently tighten the handle and head together. The wedge exerts a spreading action in both lateral directions and it is comprised of a resilient compressible plastic material having a modulus

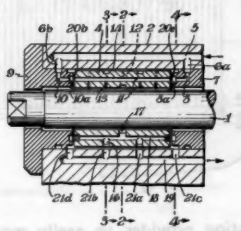
of elasticity which substantially matches the shrinkage and expansion factor of the wood which it displaces so that, as the moisture content of the wood evaporates and shrinkage takes place, the restorative property of the wedge compensates for such shrinkage. Conversely, as the shrunken wood absorbs moisture and regains size, the wedge is forcibly contracted. Thus, in any condition of the wood, the handle remains tight. An impact tool embodying such a wedge.

3,669,513
BRAKING CIRCUIT WITH FLUID PRESSURE CONTROL VALVE
Donald L. Smith, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Original application Oct. 22, 1968, Ser. No. 769,482, now Patent No. 3,539,228. Divided and this application May 11, 1970, Ser. No. 48,718
Int. Cl. B60t *15/04*
U.S. Cl. 303—50 **16 Claims**



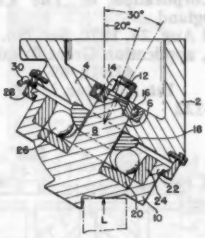
A pressure control valve of the inverter type is employed in a hydropneumatic braking circuit and comprises spaced pistons reciprocally mounted therein and connected together by a rod for simultaneous movement. Selective pneumatic actuation of the pistons sequentially opens and closes spaced poppet valve members, slidably mounted on the rod, for engaging a normally disengaged hydraulic brake or the like.

3,669,514
GASEOUS BEARING WITH STABILIZER
Ryuji Wada, Hiroshi Suzuki, and Masuo Nakato, Asahimachi, Japan, assignors to Toyoda Koki Kabushiki Kaisha (trading as Toyoda Machine Works, Ltd.)
Filed May 28, 1970, Ser. No. 41,440
Claims priority, application Japan, May 30, 1969, 44/50,662
Int. Cl. F16c *17/16*
U.S. Cl. 308—9 **4 Claims**



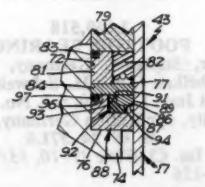
Present invention relates to gas bearing with stabilizer intended to elevate occurence range of whirl phenomenon thereby reliably preventing deterioration of rotating accuracy due to phenomenon and seizure of bearings to extend service life of gas bearing for high speed rotation at several tens of thousands to several hundred thousands revolutions per minute. Gas bearing has rotating shaft surrounding housing with bearing bush inserted between shaft and housing so that clearance of gas film are provided on inside and outside of bearing bush. Bearing bush has inclined nozzles which incline in direction opposite to rotation of shaft. Pressurized gas is supplied through nozzles to rotate bearing bush at appropriate speed and in same direction as rotating shaft. Gas lubricating film is formed by pressurized gas at internal and external clearances of bearing bush whereby rotating shaft is supported by bearing bush on film.

3,669,515
BALL BEARING STRUCTURE
Takeo Nojima, Chiba-ken, Japan, assignor to Jupitor Corporation of Washington, Seattle, Wash.
Filed June 24, 1970, Ser. No. 49,453
Int. Cl. F16c *35/06, 33/60*; B60b *17/00*
U.S. Cl. 308—16 **5 Claims**



The present invention relates to a roller bearing structure wherein the axis of the force bearing wheel is mounted at an angle of 20 to 30 degrees relative to the major force component exerted upon the structure. The structure is such that the main force supporting roller bearings are captured by three bearing races providing three point contact with each bearing, thus eliminating the need for a cage.

3,669,516
PUMP
James H. Larson, Anoka, Minn., assignor to Graco Inc., Minneapolis, Minn.
Filed Mar. 4, 1970, Ser. No. 16,376
Int. Cl. F16c *33/74*
U.S. Cl. 308—36.1 **11 Claims**

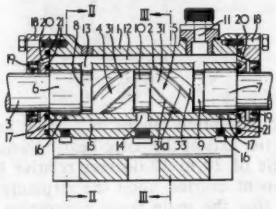


A pump for fluid slurry materials is provided with bearing and sealing portions and with one-way valve constructions which permit the pumping of slurry materials and prevent such materials from penetrating bearings, seals and valves in such a way as to cause binding or other problems in the operation of such parts. The bearing and sealing construction includes a plurality of annular members which essentially completely fill a specified critical area or space within an annular bearing and sealing section located between relatively movable inner and outer cylindrical surfaces. Each such section includes a radially resilient scraper member, which has a scraping edge resiliently engaging one of the cylindrical surfaces and an opposite edge spaced from the other

cylindrical surface. The scraper member is supported and guided immediately adjacent its scraping edge by two relatively rigid annular members or bearing wall portions, one on each side of the scraping edge. A resiliently compressed annular filler member of expansible material, such as rubber, is located immediately adjacent the opposite edge of the scraper member and thus prevents slurry material from penetrating into the space between said opposite edge and the remaining cylindrical surface. In one form, the bearing and sealing section also includes one or more ceramic or other hard nonmetallic annular bearing or gland members.

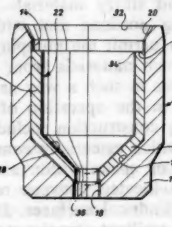
The one-way valves in the pump include metallic valve ball members supported in sliding engagement with nonmetallic plastic or ceramic guiding portions and valve seats.

3,669,517
HYDROSTATIC/HYDRODYNAMIC SHAFT BEARING ARRANGEMENTS
Edward Victor Lawson Hughes, Solihull, England, assignor to Corporation of The City of Coventry, Coventry, England
Filed Aug. 24, 1970, Ser. No. 66,412
Claims priority, application Great Britain, Aug. 26, 1969, 42,418/69
Int. Cl. F16c *33/66*
U.S. Cl. 308—122 **5 Claims**



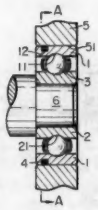
Hydrostatic/hydrodynamic shaft bearing arrangements are disclosed in which journalling of a shaft in a bearing body is provided with at least one journal portion formed with helicoidal relief for effecting hydrodynamic pumping of lubricant from low pressure lubricant supply passageway means in the bearing body to plain bearing journalling or location of the shaft relative to the bearing body via separate high pressure lubricant flow passageway means in the bearing body for hydrostatic lubrication at said plain bearing journaling or location.

3,669,518
FOOTSTEP BEARING
Gisbert Kohler, Stuttgart, Germany, assignor to SKF Kugellagerfabriken G.m.b.H., Schweinfurt, Germany
Filed June 17, 1970, Ser. No. 46,906
Claims priority, application Germany, June 19, 1969, G 69 24 371.6
Int. Cl. F16c *17/10, 33/04*
U.S. Cl. 308—156 **7 Claims**



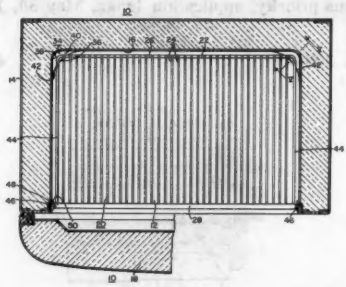
A footstep bearing for spinning and twisting spindles comprising a carrier having a cylindrical interior and a conically formed lower end. A bearing box separably formed having a complementary shape is press fit within the carrier. The bearing box is thin walled made of sheet bearing material while the carrier walls are of thicker dimension, of non-bearing material and provide support for the bearing load exerted thereon.

3,669,519
ANTICREEP BEARING ASSEMBLY FOR AN ANTIFRICTION BEARING
Tadanobu Takahashi and Kunihiko Usami, Fujisawa, Japan, assignors to Nippon Seiko Kabushiki, Tokyo, Japan
Filed Dec. 2, 1970, Ser. No. 94,450
Claims priority, application Japan, Dec. 9, 1969, 44/116,336
Int. Cl. F16c *33/30*
U.S. Cl. 308—236 **3 Claims**



Anticreep bearing assembly provided with an anticreep ring for frictional engagement with each of a pair of radically spaced annular surfaces. The anticreep ring having a resilient property is provided with at least two outwardly or inwardly expanded arched portions and an intermediate arched portion between the outwardly or inwardly expanded arched portions. The anticreep ring is fixed at its seated position by engagement of at least a portion thereof with an annular groove which is formed at a deviated position upon a fitting periphery surface of outer ring or inner ring.

3,669,520
SHELF AND LINER ASSEMBLY
Robert A. Jansen, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Aug. 31, 1970, Ser. No. 68,225
Int. Cl. A47b *88/00*
U.S. Cl. 312—351 **7 Claims**

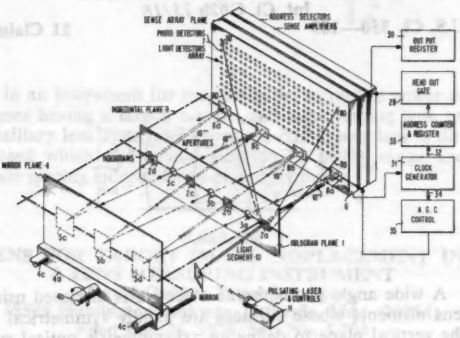


The invention provides an easily mountable and dismountable shelf which is supported on the inner liner of a refrigerator at its rear side by fillet grooves integrally molded in the inner liner and at its front side by resilient legs of an angled member, forming a portion of the frame of the shelf, which are disposed in apertures integrally molded in the inner liner.

ERRATUM

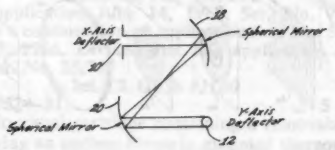
For Class 325—329 see:
Patent No. 3,669,511

3,669,521
TIME SENSED STATIC BEAM HOLOGRAPHIC STORAGE SYSTEM
John B. Tait, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 4, 1971, Ser. No. 103,663
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **7 Claims**



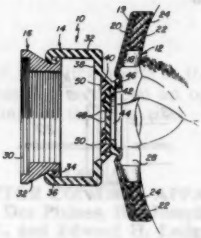
A finite segment of coherent light issued by a pulsating light source is utilized to read out images of information patterns from a plurality of holograms. An arrangement of reflecting mirrors provides a reflecting path by virtue of which the light segment passes through each hologram at differentially timed intervals in the time domain to cause different images of said patterns to be read out sequentially from said holograms and onto a plane array (or arrays) of photodetectors disposed in the path of said images. The sensing of information at the sense array provides a light pulse position sensing signal to control automatic gain control in the sense amplifiers. The coincidence of a readout gate signal with differentially timed light pulse position signals causes electrical information pattern signals, corresponding to said information patterns, to be read out at said differentially timed intervals.

3,669,522
REFLECTIVE RELAY OPTICAL SYSTEM FOR TWO-AXIS DEFLECTION
Robert J. Anderson, Rockville, Md., assignor to The Singer Company
Filed Mar. 20, 1970, Ser. No. 21,307
Int. Cl. G02b *17/00*
U.S. Cl. 350—6 **5 Claims**



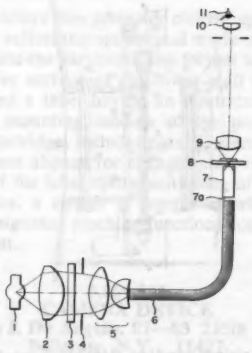
A reflective optical system is provided which serves basically to relay a laser, or other, beam from a first deflector to a second deflector in order to achieve two dimensional scanning of the beam. A spherical mirror is used in the relay system to achieve optical coupling between the two axes of beam deflection. The relay ouptical system of the invention, therefore, is reflective, and is less subject to optical losses, less expensive, and easier to align, than the prior art refractive relay systems. Electronic means may also be provided in the relay system of the invention to compensate for any interaction produced by the system between otherwise orthogonal scan axes.

3,669,523
PROTECTIVE EYESHIELD
Oliver J. Edwards, Jr., Rochester, N.Y., assignor to Raytheon Company, Lexington, Mass.
Filed June 22, 1970, Ser. No. 48,396
Int. Cl. G02b *23/16*
U.S. Cl. 350—57 **7 Claims**



An eyeshield which applies reduced peak pressures to the head of a user, comprising a mounting base and an eye seal section interconnected by a rubber spring section which rolls upon itself when subjected to recoil and other pressures, and including an axial aperture with covering flaps adapted to automatically open when the device is subjected to relatively light pressures.

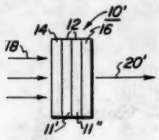
3,669,524
BRIGHT ILLUMINATOR FOR MICROSCOPES
Megumu Shio, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Aug. 5, 1970, Ser. No. 61,280
Claims priority, application Japan, Aug. 8, 1969, 44/74,827
Int. Cl. G02b *21/12*
U.S. Cl. 350—87 **1 Claim**



This invention provides a high brightness illuminating device for microscopes. The device includes a light source,

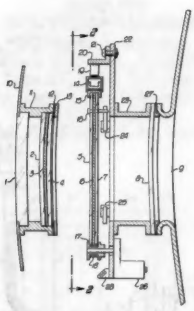
a condenser system consisting of a condenser lens and a collector lens, an iris diaphragm, a heat ray absorbing filter, a light guide and a cylindrical mirror. The iris diaphragm and the filter are placed between the collector lens and the cendenser lens. One end of the light guide is placed very close to the condenser lens and at the other end of the light guide the cylindrical mirror is placed. The cylindrical mirror has a finished and chromium plated mirror surface and entrance surface functioning as diffuser.

3,669,525
LIQUID CRYSTAL COLOR FILTER
James E. Adams, Ontario, and Werner E. L. Haas, Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Jan. 6, 1971, Ser. No. 104,367
Int. Cl. G02f *1/24*
U.S. Cl. 350—158 **15 Claims**



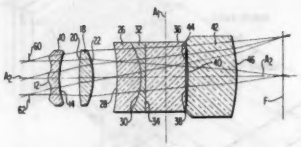
An optical filter system capable of transmitting a single wavelength band or a plurality of wavelength bands of incident radiation while simultaneously rejecting substantially all other wavelengths of incident radiation is described. The optical filter system utilizes liquid crystal films having optical negative properties.

3,669,526
AUTOMATIC ELECTRIC SELF-SYNCHRONIZING POLARIZING WINDOWS
Alvin Weiss, 342 N. Cordova, Burbank, Calif. 91505
Continuation of application Ser. No. 660,115, Aug. 11, 1967, now Patent No. 3,521,300, dated July 21, 1970. Divided and this application Sept. 2, 1969, Ser. No. 863,742
Int. Cl. G02b *27/28*
U.S. Cl. 350—159 **10 Claims**



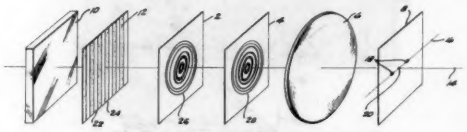
A first polarizing window element is positioned over a window opening in the wall of an aircraft cabin and fixedly attached to the cabin wall. A second polarizing window element is positioned over this opening in overlying relationship to the first element, this second element being supported for rotation relative to the first. The rotatable element is circular and is rotatably driven by means of a friction roller drive which engages the rim thereof. The amount of light entering the cabin through the window is controlled by rotating the rotatable element relative to the fixed element, either by means of a manual control or in response to a light sensitive detector.

3,669,527
WIDE ANGLE PHOTOGRAPHIC OBJECTIVE HAVING NONSPHERICAL SURFACES
David L. Fuller, Atlanta, Ga., assignor to Scripto, Inc., Atlanta, Ga.
Filed Dec. 3, 1970, Ser. No. 94,830
Int. Cl. G02b *13/18*
U.S. Cl. 350—189 **11 Claims**



A wide angle photographic objective is disclosed using lens elements whose surfaces are axially symmetrical in the vertical plane to define an axi-symmetric optical system and whose surfaces are concentric in the horizontal plane about a common axis of revolution to define a concentric optical system. Excellent correction of spherical aberration is attained for the axial system by the use of an aspheric front surface for the objective and correction for spherical aberration for the concentric system is contributed largely by separate lens means. Substantially cylindrical tangential and sagittal images for the objective with little residual astigmatism is also achieved by the use of a specially constructed lens group which also contributes substantially to correction for lateral color in the axi-symmetric system.

3,669,528
DEVICE FOR PRODUCING IDENTIFIABLE SINE AND COSINE (FOURIER) TRANSFORMS OF INPUT SIGNALS BY MEANS OF NONCOHERENT OPTICS
John M. Richardson, Malibu, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Continuation-in-part of abandoned application Ser. No. 770,230, Oct. 24, 1968. This application July 8, 1971, Ser. No. 160,852
Int. Cl. G02b *27/38*
U.S. Cl. 350—205 **13 Claims**



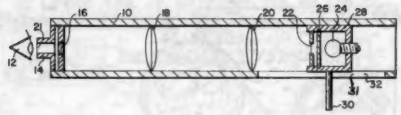
Fourier transforms are produced on an output plane when input images are projected by means of spatially incoherent light through a pair of transparencies each having a Fresnel zone pattern thereon. The system is designed to operate as close to the geometrical optics limit as is practically feasible.

3,669,529

OPTICAL SYSTEM FOR VARYING THE POWER RANGE AND SCALE SPACING IN A LENS MEASURING INSTRUMENT

David Guyton, Brookline, Mass.
(5505 Huntington Parkway, Bethesda, Md. 20014)

Filed Jan. 2, 1970, Ser. No. 234
Int. Cl. A61b 3/00, 3/02
U.S. Cl. 351—17 4 Claims



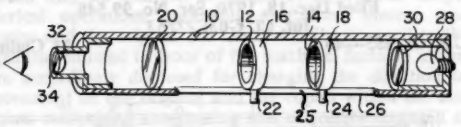
In an instrument for measuring the refractive power of lenses having a target, a scale, and a converging lens, an auxiliary lens system added to the converging lens is disclosed which allows manipulation of power range and scale spacing independently of one another.

3,669,530

LENS FOR TARGET IMAGE DISPLACEMENT IN A LENS MEASURING INSTRUMENT

David Guyton, Brookline, Mass.
(5505 Huntington Parkway, Bethesda, Md. 20014)

Filed Jan. 26, 1970, Ser. No. 5,705
Int. Cl. A61b 3/00, 3/02
U.S. Cl. 351—17 5 Claims



In a lens measuring instrument or optometer of the type employing a target, scale, and converging lens for measuring the power of a lens or the power error of an eye in two principal meridians, means are disclosed for moving an image of one orthogonal target segment through the plane of an image of another such target segment facilitating simultaneous measurement of the two meridians and allowing the use of a plurality of types of targets.

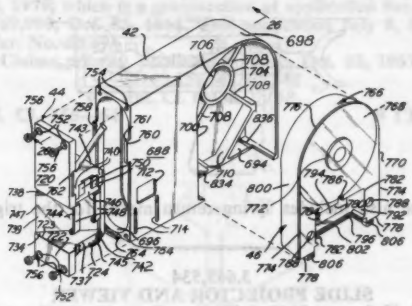
3,669,531

COMBINATION CARTRIDGE CONTAINING REMOVABLE TAPE MAGAZINE AND REMOVABLE FILMSTRIP HOLDER

Donald A. Youngblood, 111 Dolly Lane, Chalfont, Pa. 18914

Original application June 14, 1968, Ser. No. 739,909, which is a continuation of application Ser. No. 535,149, Mar. 17, 1966. Divided and this application Apr. 6, 1970, Ser. No. 25,707
Int. Cl. G03b 31/00
U.S. Cl. 352—31 5 Claims

An audio-visual cartridge containing a removable filmholder having an endless filmstrip mounted thereon and a removable magazine containing an endless audio tape mounted therein. The cartridge has, adjacent the opening of its compartment which receives the filmholder, a window or framing aperture against which the filmstrip moves; adjacent the window are a pair of slots for receiving the film strip drive sprockets. The filmholder also contains an angularly-mounted mirror for directing the projection light beam through the portion of the filmstrip adjacent the window. The cartridge also has, adjacent the opening of its compartment which receives the magazine, openings for providing access to the audio tape for moving same from a protected to an operative position via aligned openings in the magazine.

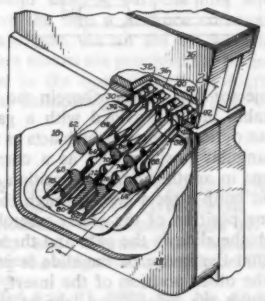


3,669,532

PROJECTOR CONTROL APPARATUS

Erwin E. Figge, Des Plaines, Ill., Joseph H. Lancor, Jr., Arcadia, Calif., and Edward H. Lodge, Wilmette, Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Mar. 23, 1970, Ser. No. 21,607
Int. Cl. G03b 23/02
U.S. Cl. 352—78 C 9 Claims



A motion picture film projector control apparatus which automatically selects the operational mode of the projector to accommodate the particular film format to be displayed. Upon the outer surface of the lower wall of a film cartridge is placed a label having an electrically conductive surface. The mounting module of the projector, which receives the cartridge, includes parallel electrical contacts. The contacts are aligned for engagement with the conductive surface of the label upon positioning of the cartridge. In this manner, a circuit is completed which serves to actuate predesignated machine functions corresponding to the film format.

3,669,533

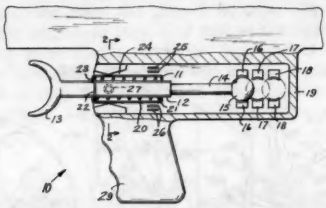
CAMERA DEVICE

Sabino J. De Angelis, 87—03 235th Court, Bellerose, N.Y. 11427

Filed May 6, 1971, Ser. No. 140,777
Int. Cl. G03b 19/18
U.S. Cl. 352—95 3 Claims

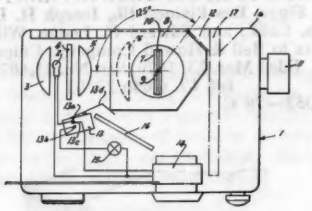
A device for a motion picture camera, having a trigger with a flexible rod which will alternately make contact

with electrical contacts so as to change the camera to shoot for wide angle, single frame or telephoto. The



device also includes spring return means for the trigger rod.

3,669,534
SLIDE PROJECTOR AND VIEWER
Erich Hofmann, Kriftel, Taunus, Ernst Krull, Kronberg, Taunus, Werner Hans Johannsen, Frankfurt am Main, Robert Oberheim, Neu Isenburg, and Josef Scheibel, Ober-Morlen, Germany, assignors to Braun Aktiengesellschaft, Frankfurt am Main, Germany
Filed June 27, 1969, Ser. No. 837,100
Int. Cl. G03b *21/00, 23/00*
U.S. Cl. 353—21 **18 Claims**



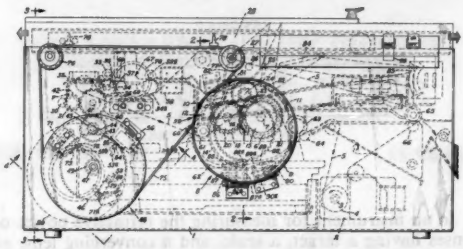
A slide projector and viewer wherein the housing supports a pivotable insert provided with a gate for slides and carrying an optical element which acts as a magnifying lens in one angular position and as a component of a condensing lens in another angular position of the insert. The projection lamp directs light through the condensing lens in the one position of the insert whereby such light passes through the slide in the gate and through a projection lens so that the image of the slide is projected onto a screen. In the other position of the insert, the operator can look through the magnifying lens of the insert and a slide in the gate to see an enlarged image because the gate then extends across the path of a second light source, either a separate lamp or a reflector which directs some light issuing from the projection lamp against the underside of the slide.

ERRATUM

For Class 355—3 see:
Patent No. 3,669,412

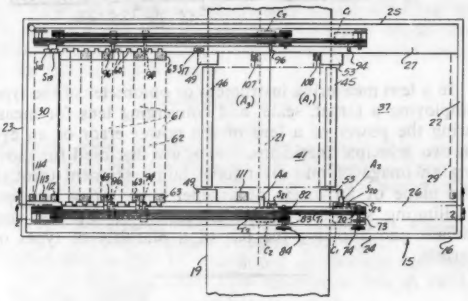
3,669,535
PHOTOCOPY MACHINE
Alfred M. Hyosaka, Morton Grove, and Charles W. Giebelhausen, Buffalo Grove, Ill., and Arthur L. Kaufman, Westport, Conn., assignors to Speed-O-Print Business Machines Corporation, Chicago, Ill.
Filed Jan. 21, 1970, Ser. No. 4,534
Int. Cl. G03g *15/00, 15/04*
U.S. Cl. 355—8 **8 Claims**

An electrostatic photocopy machine moves a graphic original on a carriage from an intermediate normal or "home" position first in one direction, to a position at or beyond the position which it is to occupy at the beginning of the copy stroke, then in a second or opposite direction for the copy stroke, and finally in the first direction again back to the home position. A control circuit controlled by cam actuated switches controls the movement of the original in synchronization with movement of the copy material. A cam actuated switch is provided



which is operable before the machine can be cycled to move the carriage to the home position when the machine is turned on in the event the carriage has been stopped in a position other than the home position. A time relay is provided which is activated simultaneously with a cam actuated knife switch. When the relay cuts out the direction of movement of the carriage is reversed.

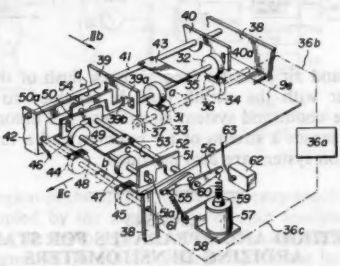
3,669,536
DATA STRIP COPYING ATTACHMENT FOR A PHOTOCOPYING MACHINE
Kenneth N. Scott, P.O. Box 213, Toyah, Tex. 79785
Filed Dec. 18, 1970, Ser. No. 99,548
Int. Cl. G03l *27/62*
U.S. Cl. 355—40 **21 Claims**



A machine for copying data to be incorporated in tax statements, or the like. The data is in the form of information carried on sets of strips slidably-mounted on a supporting feeder plate. The machine has a seat to receive the loaded feeder plate. The seat is aligned with a fixed-positioning plate located over the exposure area of a photo-copying machine. Another seat on the opposite side of the positioning plate contains a removable aligned receiving plate on which the strips are slidably-received after they have been copied. The strips have end lugs engageable by electrically-controlled drive pawls carried on carriages connected to sets of endless sprocket chains mounted on the chassis of the machine. The strips have end markers sensed by photoelectric sensing elements mounted on the carriages connected to one set of endless sprocket chains. A programming electrical circuit operates the sprocket chain motors and drive elements to sequentially move sets of related strips to specific copying

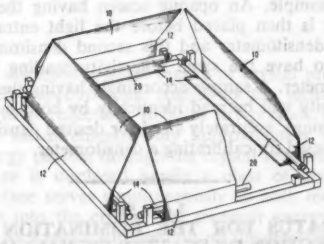
positions on the positioning plate, and thence to the receiving plate. Limit switches control the cycle of operations so that the machine stops when all the information strips have been copied and delivered to the receiving plate.

3,669,537
AUTOMATIC COPYING AND BINDING MACHINE
Yugoro Kobayashi, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan
Filed Aug. 25, 1970, Ser. No. 66,736
Claims priority, application Japan, Aug. 30, 1970, 45/68,803
Int. Cl. G03b 27/62
U.S. Cl. 355—50 10 Claims



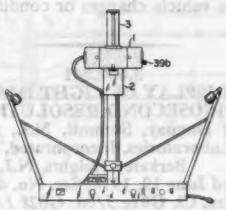
An automatic copying and binding machine capable of automatically producing duplicates of original documents to be copied and, when necessary, binding the duplicates together. The duplicates produced, either bound or not bound, and the originals from which the duplicates are produced may be stamped or sealed or have other simple clerical operations optionally performed thereon and copies and the original are automatically returned to the operator situated in front of the machine. Suitable means are accordingly disclosed for changing the direction of movement of the original and the copies within the machine, comprising cooperating sets of rollers arranged at right angles to each other and which respectively engage and release the processed sheets in response to the actuation of sensing switch means.

3,669,538
ILLUMINATION SYSTEM
Raymond L. Fowler, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 31, 1970, Ser. No. 68,264
Int. Cl. G03b 27/54
U.S. Cl. 355—67 5 Claims



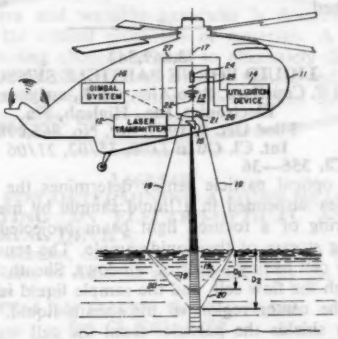
A plane mirror illumination system for illuminating a document plane of a document copying machine in such a manner that the light intensity at any point of the document plane varies inversely to the relationship known as the cosine fourth power law. This compensates for the attenuation of light by the focusing lens according to the cosine fourth power law and provides a uniform illumination level on the image plane.

3,669,539
MICROFILM CAMERA
Susumu Okuyama, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Continuation-in-part of application Ser. No. 33,177, May 8, 1970, which is a continuation of application Ser. No. 769,990, Oct. 23, 1968. This application July 9, 1970, Ser. No. 53,494
Claims priority, application Japan, Oct. 28, 1967, 42/69,251, 42/69,252
Int. Cl. G03b 27/58
U.S. Cl. 355—64 9 Claims



A microfilm copying camera has a fixed horizontal base adapted to receive an object to be photographed and a lens movable vertically along a fixed optical axis. A camera body is located above the lens with means provided for moving the body horizontally transversely of the optical axis. Means are provided for advancing roll film in a film plane above an aperture in line with the optical axis. The aperture is defined on one side by a frame edge fixed with respect to the camera body and on the other side by a movable masking edge which moves in a direction opposite to that of the camera body relative to the optical axis whereby the size of the aperture may be changed without moving the center of the aperture away from the optical axis. A variable film advance is provided to move the film a distance corresponding to the size of the aperture. As an aid to the selection of the proper aperture means are provided for projecting through the lens prior to the operation of photographing a rectangle of light delineating the area which will be imaged on the film.

3,669,540
OPTICAL DEPTH FINDER AND ELEMENTS THEREFOR
William J. Rattman, Needham, Frank R. Wasson, Jr., Chelmsford, and Gordon C. MacKenzie, North Billerica, Mass., assignors to Raytheon Company, Lexington, Mass.
Filed Aug. 31, 1970, Ser. No. 68,206
Int. Cl. G01c 3/08; G02b 27/28
U.S. Cl. 356—4 7 Claims



An improved optical depth finder, and elements therefor, for depth sounding and detection of submerged targets

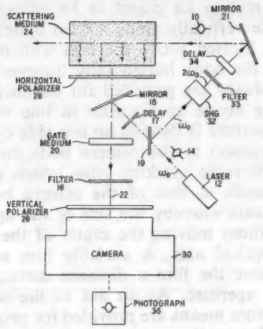
from an airborne vehicle. The disclosed system uses a coherent beam of polarized light from a laser directed downwardly toward the surface of a body of water and processes the polarized surface specular reflected energy, energy reflected by submerged targets within the beam, and energy reflected by the bottom of the body of water to derive the desired information. Means are provided selectively to attenuate the reflected energy in accordance with the particular source thereof so as to permit the dynamic range of the processor of the reflected energy to be reduced and the system to be used when the height of the airborne vehicle changes or condition of the water varies.

3,669,541

DIRECT DISPLAY OF LIGHT IMAGES WITH PICOSECOND RESOLUTION

Michel Albert Duguay, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed June 19, 1970, Ser. No. 47,838
Int. Cl. G01c *3/08;* **G02f** *1/28*
U.S. Cl. 356—5 **18 Claims**



A light image such as a picosecond optical pulse generated by a laser or an optical echo signal generated by picture ranging system, is displayed directly with picosecond resolution. A laser pulse, for example, is made incident upon a scattering medium to produce a scattered form of the pulse which is viewed by the naked eye, a camera or other display device through an optical gate which functions as a camera shutter having an extremely short framing time of the order of a few picoseconds or less. The optical gate utilizes a material in which birefringence is optically induced by an optical control pulse of high intensity and picosecond duration. Other applications, including optical read-out of computer memories formed by stacks of photographs or holograms, are described.

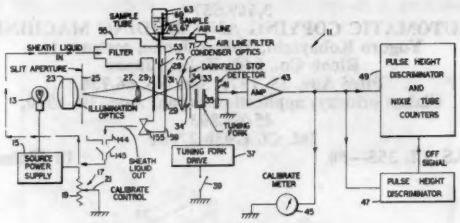
3,669,542

LIQUID BORNE PARTICLE SENSOR

David F. Capellaro, Palo Alto, Calif., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Oct. 9, 1969, Ser. No. 865,098
Int. Cl. G01n *1/00, 15/02, 21/06*
U.S. Cl. 356—36 **9 Claims**

An optical particle sensor determines the number of particles suspended in a liquid sample by measuring the scattering of a focused light beam projected through a flowing stream of the liquid sample. The sensor includes a flow cell having a pair of windows. Sheath liquid flows through the flow cell, and the sample liquid is introduced into the center region of the sheath liquid. The liquid sheath shields the particles from the cell walls and accurately positions the particles at the focus of the light beam. The light beam is focused on the liquid sample in the center of the fluid flowing through the flow cell so that any contaminate on the cell windows will have minimum effect. The sensor includes a sample container mounting assembly that rotates the sample container from an upright loading position to an inverted operating position. The sample is introduced into the flow cell by



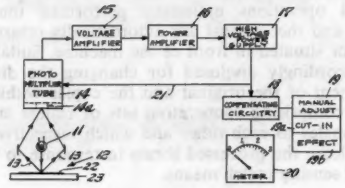
gravity and air pressure feed. A back flush of the sample container with the sheath fluid is provided to assure a complete count and system cleanliness. An automatic cut-off that senses a stream of air bubbles, and a tuning fork calibration system are also provided.

3,669,543

METHOD AND APPARATUS FOR STANDARDIZING DENSITOMETERS

Angelo Vaccaro, Port Washington, N.Y., assignor to Columbia Controls Research Corporation, Glen Cove, N.Y.

Filed Feb. 6, 1970, Ser. No. 9,284
Int. Cl. G01n *21/20, 21/48, 33/16*
U.S. Cl. 356—42 **7 Claims**



A method and apparatus for standardizing two densitometers to have the same reading for samples having the same optical density even though both densitometers are not identically calibrated by reading the sample with one densitometer and noting its density. An opaque screen having an aperture is then positioned before the light entrance of the densitometer with the size of the aperture being adjusted to produce the same densitometer reading as the sample. An opaque screen having the same size opening is then placed before the light entrance of the second densitometer and this second densitometer is adjusted to have the same reflectivity reading as the first densitometer. A sample accordingly having the same optical density will be read identically by both meters. Also, the openings, accurately sized for desired density readings may be used for calibrating a densitometer.

3,669,544

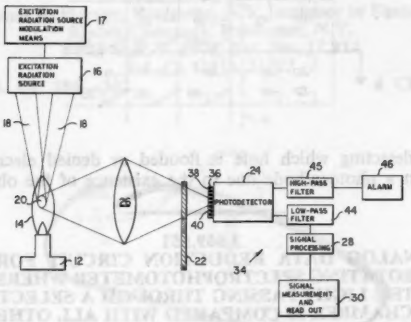
APPARATUS FOR THE ELIMINATION AND/OR DETECTION OF SCATTER SIGNALS IN ATOMIC FLUORESCENCE SPECTROSCOPY ANALYSIS MEANS

Zindel H. Heller, Plainview, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,540
Int. Cl. G01n *21/52, 21/54*
U.S. Cl. 356—85 **6 Claims**

New and improved apparatus for eliminating and/or detecting scatter signals from the radiation scattered by

scattering particles in the sample flame of atomic fluorescence spectroscopy analysis means are provided, and comprise means to convert the scattered radiation to relatively high frequency scatter signals which occupy a higher frequency region of the output signal frequency spectrum than that occupied by the atomic fluorescence analysis output signal, and means to separate said scatter signals from said output signal to eliminate the former from the latter and/or to enable detection of said scatter signals.

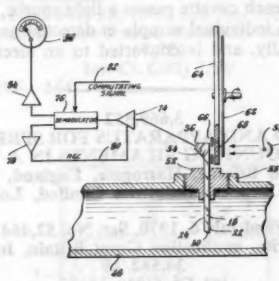


3,669,545

APPARATUS AND METHOD FOR ANALYSIS BY ATTENUATED TOTAL REFLECTION

Anthony C. Gilby, Darien, Conn., assignor to Wilks Scientific Corporation, South Norwalk, Conn.

Filed May 6, 1971, Ser. No. 140,677
Int. Cl. G01j *3/00*; G01n *1/10*
U.S. Cl. 356—74 **18 Claims**



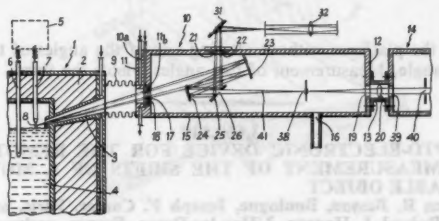
There is disclosed a novel family of crystal probes for use in making spectroscopic studies by the technique of attenuated total reflection. In prior art crystals used for probe type measurements, only approximately half the radiant energy passing through the crystal reached the detector. There is disclosed herein a class of crystals in which one face serves simultaneously to both totally reflect energy into the crystal and transmit energy out of the crystal. As a result, substantially all the entering energy reaches the detector. There is also disclosed a novel, double beam instrument which employs a crystal of the type referred to herein. In this instrument a portion of the radiation is directed into the crystal and thence to the detector. A reference beam of the radiation is passed directly to the detector. By means of a chopper and an electronic circuit there is provided a ratio readout of the sample and reference beams.

3,669,546

DEVICE FOR SPECTROGRAPHIC ANALYSIS OF A LIQUID METAL

Jean Marcel Virloget, Le Mesnil-Saint-Denis, France, assignor to Société Francaise d'Instruments de Controle et d'Analyses, Yvelines, France

Filed Oct. 26, 1970, Ser. No. 83,801
Claims priority, application France, Oct. 28, 1969, 6936939
Int. Cl. G01j *3/30, 3/00*
U.S. Cl. 356—86 **13 Claims**



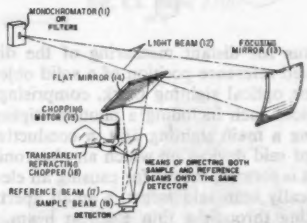
Apparatus for receiving a light beam from a selected region of an electric arc and transmitting it without alteration into a spectrograph, comprises a sealed enclosure having a controlled atmosphere, a concave receiving mirror which is adjustable in position relative to two perpendicular axes, a flat mirror, a flat dividing mirror which divides the beam into a main fraction, which forms a real image at the spark point of the spectrograph, and a secondary fraction which controls the position of the receiving mirror.

3,669,547

OPTICAL SPECTROMETER WITH TRANSPARENT REFRACTING CHOPPER

Darrell Dean Sell, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Sept. 14, 1970, Ser. No. 71,910
Int. Cl. G01j *3/08*
U.S. Cl. 356—93 **6 Claims**



A sensitive and versatile apparatus is described for measuring the optical properties of materials. A transparent refracting chopper is used to alternately displace the radiation from the source into the sample and reference beams. Both transmittance and reflection measurements can be made using this apparatus.

3,669,548

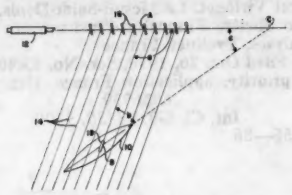
METHOD FOR DETERMINING A SHIP'S HEADING EMPLOYING AN ELECTRO-OPTICAL ANGLE MEASURING DEVICE

Daniel E. Altman, San Diego, Calif., assignor to the United States of America as represented by the Secretary of the Navy

Filed July 13, 1970, Ser. No. 54,502
Int. Cl. G01c *1/02*
U.S. Cl. 356—141 **1 Claim**

Surveying means and method are shown for measuring the angles of a triangle one corner of which is on an un-

stable platform. An optical system establishes a base line, which will move parallel to itself in response to movement



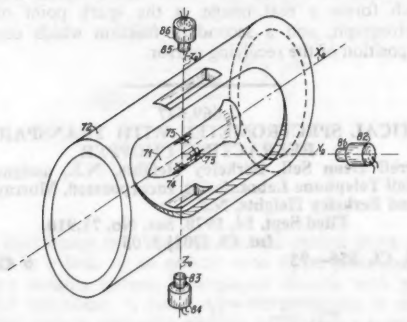
of the platform without altering any of the angles of the triangle. Measurement of two angles, yields the third.

3,669,549

OPTO-ELECTRONIC DEVICE FOR THE REMOTE MEASUREMENT OF THE SHIFTS OF A MOVABLE OBJECT

Jean R. Besson, Boulogne, Joseph F. Cumer, Paris, and Roland J. Hoarau, L'Hay-les-Roses, France, assignors to Office National d'Etudes et de Recherches Aerospatiales, Chatillon-Sous-Bagneux, France

Filed June 18, 1970, Ser. No. 47,332
Claims priority, appplication France, June 20, 1969, 6920825
Int. Cl. G01b *11/26*
U.S. Cl. 356—152 4 Claims



Apparatus for distant measuring of the displacement about a fixed reference position of a solid object carrying at least one optical sighting mark, comprising opto-electronic devices each including a photomultiplier tube and each having a main sighting axis, a conductive target in each one of said devices on which an electronic image of said object is formed, means for causing an electron beam to periodically scan said target, a small aperture in said target letting through a thin electron beam, means for amplifying the current of said beam, means for deriving from said amplified current an electric signal, and computer means for combining the signals delivered by all of said devices into other signals representing the components of said displacement in a three-dimensional coordinate system.

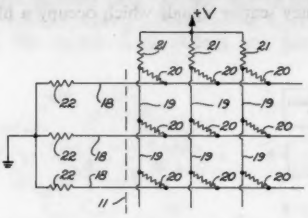
3,669,550

COORDINATE DETECTOR

John M. Grant, Granada Hills, and Albert D. Stolzy, Sherman Oaks, Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 23, 1970, Ser. No. 21,651
Int. Cl. G01b *11/26;* H01j *39/12*
U.S. Cl. 356—152 13 Claims

Apparatus to detect the Cartesian or angular coordinates of an object having a different chromaticity or light intensity than its background so as to make its discernment possible. An electron multiplier is employed which has columns and rows of holes in a dielectric. The holes have surfaces which support secondary emission. The coordinates of the object are thus determined



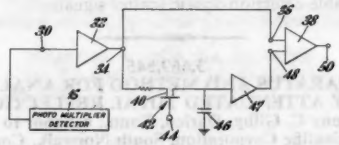
by detecting which hole is flooded or denied electrons from a photocathode due to the existence of the object.

3,669,551

ANALOG DATA REDUCTION CIRCUIT FOR A ROTATING SPECTROPHOTOMETER WHEREIN THE LIGHT PASSING THROUGH A SELECTED CHAMBER IS COMPARED WITH ALL OTHERS

Paul E. Bucher and Thomas Picunko, Bronxville, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Apr. 15, 1971, Ser. No. 134,338
Int. Cl. G01n *21/24*
U.S. Cl. 356—197 1 Claim



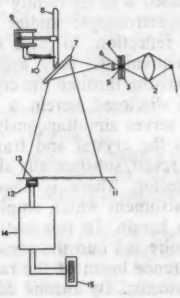
Known rotating spectrophotometers have a series of cuvettes arranged concentrically around a horizontally rotatable disc so that when the disc is rotated, centrifugal force mixes and transfers reagents and samples to the cuvettes. As each cuvette passes a light source, the absorbence of each individual sample is detected and measured photometrically, and is converted to an electrical signal pulse.

3,669,552

METHOD AND APPARATUS FOR SPREADING AND COUNTING FILAMENTS IN A YARN

Josiah Alfred Briscoe, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England

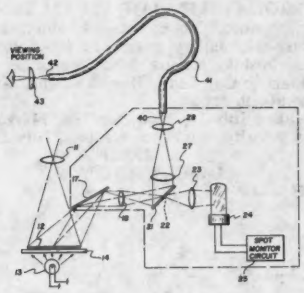
Filed July 6, 1970, Ser. No. 52,464
Claims priority, application Great Britain, July 9, 1969, 34,582/69
Int. Cl. G01n *21/22*
U.S. Cl. 356—199 8 Claims



A method and apparatus for counting filaments in a yarn by gripping the filaments between smooth surfaces

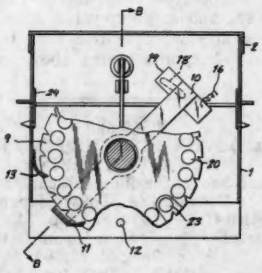
which are capable of making line contact to spread the filaments into a single layer array, which may be checked before counting.

3,669,553
SPOT MONITOR AND VIEWING APPARATUS FOR FILM PRINTING
James E. Harvey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 9, 1970, Ser. No. 17,814
Int. Cl. G01n *21/22*
U.S. Cl. 356—202 4 Claims



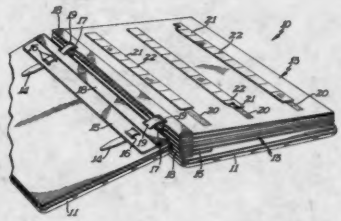
A spot monitor system for use during film printing including a flexible fiber optic rod and a lens assembly to permit the operator to view the monitored portion of a film from a convenient location.

3,669,554
DEVICE FOR ANALYZING CHROMATOGRAPHIC DISK IN A SPECTROPHOTOMETER
Oswald Horer and Eugen Bujor, Bucharest, Rumania, assignors to Institutul de Virusologie "Stefan S Nicolae," Bucharest, Rumania
Filed July 29, 1970, Ser. No. 59,080
Claims priority, application Rumania, Aug. 11, 1969, 60,776
Int. Cl. G01j *3/50*
U.S. Cl. 356—244 3 Claims



The invention refers to a device adaptable to common single- or double-beam spectrophotometers, which permits serial determination of substances impregnated on disks, and which consists in a mechanism for changing and centering of the disks mounted in a holder within the cell compartment of the spectrophotometer. A manually or an automatic sample change is made from within or without of the cell compartment of the spectrophotometer. The control disk is mounted in a mobile holder, which can be adapted to the sample holder or in front of the reference beam, depending upon the spectrophotometer type.

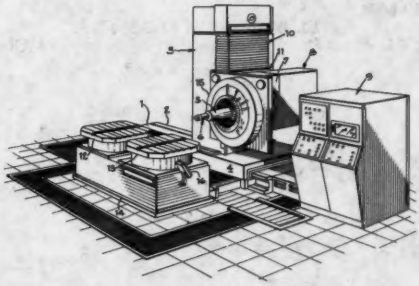
3,669,555
PHOTOGRAPH ALBUM PAGES AND METHOD OF MAKING THE SAME
William W. Holes, 1610 S. 18th Ave., and Roger A. Wenstrom, 1710 10th Ave. S., both of St. Cloud, Minn. 56301
Filed Mar. 24, 1970, Ser. No. 22,164
Int. Cl. B42f *13/06*
U.S. Cl. 402—8 2 Claims



An album comprises front and rear covers and a plurality of pages bound by flexible straps and hinge elements to the covers. A plurality of adhesive coated segments are applied to opposite sides of each page and each segment has a removable liner element covering its exterior surface. The attachment segments serve to mount photographs and other materials on each surface of the page.

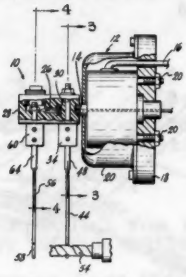
The process of making the album page comprises moving a sheet of album page material through a predetermined path of travel and applying the hinge elements and the hinge binding tape to a longitudinal edge of the page. A plurality of strips of adhesive coated attatchment material is simultaneously applied on opposite sides of the sheet, and the sheet is then cut by a cutting medium into individual pages.

3,669,556
AUTOMATIC MACHINING CENTER
Robert Lehmkuhl, Cincinnati, Ohio, assignor to The Carlton Machine Tool Company, Cincinnati, Ohio
Filed Aug. 10, 1970, Ser. No. 62,507
Int. Cl. B23c *1/00*
U.S. Cl. 408—10 6 Claims



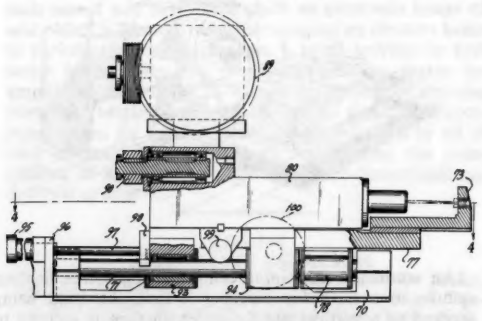
An automatic machining center having a free floating spindle in a head for carrying a tool, the head being secured to a vertical saddle, which in turn is secured to a column, which in turn is secured to a horizontal saddle, and a method for advancing head and spindle to a predetermined position, then advancing the spindle until it contacts the work surface, then employing a spindle clamp and surface sense memory clamp and feeding the head and spindle at a predetermined rate until the tool reaches a predetermined depth.

3,669,557
APPARATUS FOR DETECTING BROKEN TOOLS
Archibald S. Mitchell, East Detroit, Mich., assignor to La Salle Machine Tool, Inc., Warren, Mich.
Filed May 5, 1970, Ser. No. 34,694
Int. Cl. B23b *49/00*
U.S. Cl. 408—16 14 Claims



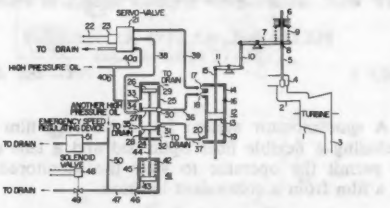
Apparatus for monitoring the condition of machine tools for the purpose of detecting a broken or missing tool. The apparatus consists of an electric current carrying tool sensing probe which is rotatably mounted adjacent a tool to be monitored. When the tool is in proper condition, rotation of the probe through a predetermined angle will result in contact of the probe with the tool. In the case of a broken or missing tool condition, such as when the tool has been broken off, no contact between probe and tool will be obtained resulting in an electric signal indicative of this tool condition. A rotary solenoid is employed to rotate the tool sensing probe, and in one form of the invention a second probe, parallel to the first probe, is connected to ground for completing the circuit when the tool to be detected is in proper condition. In another form of the invention, the second probe is omitted and the drive spindle for the tool is connected to ground.

3,669,558
APPARATUS FOR SIMULTANEOUSLY DRILLING AND TAPPING A PLURALITY OF WORK PIECES AT EACH OF A PLURALITY OF POSITIONS
Nils Hoglund, Short Hills, N.J., assignor to Tri-Ordinate Corporation
Continuation of abandoned application Ser. No. 763,043, Aug. 9, 1968. This application Mar. 1, 1971, Ser. No. 119,807
Int. Cl. B23b *39/20, 47/22, 47/32*
U.S. Cl. 408—43 4 Claims



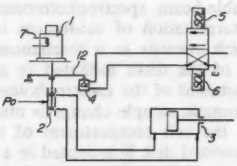
The apparatus, intended primarily for simultaneously drilling and tapping a plurality of work pieces at each of a plurality of working positions includes an annular table supporting a plurality of tapping and drilling assemblies at a plurality of spaced working positions. Rotatably mounted within the annular table support is a turret having a plurality of radial arms on which are supported retractable work supporting shuttles movable toward and from working positions adjacent the tapping and drilling assemblies mounted on the annular table. Means are provided for rotating the turret to successive working positions. A novel clamp and positioning means are mounted on the shuttles for holding and accurately positioning a work supporting cartridge. Novel multiple spindle tapping and drilling assemblies permit tapping and drilling from different angles, simultaneously of a plurality of rigidly held work pieces mounted on the shuttles.

3,669,559
CONTROL SYSTEM FOR STEAM TURBINES
Tetsuzo Sakamoto, Yokohama-shi, and Akiomi Torii, Kamakura-shi, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha (also known as Tokyo Shibaura Electric Co., Ltd.), Horikawa-cho, Kawasaki-shi, Kanagawa-ken, Japan
Filed July 14, 1969, Ser. No. 848,135
Claims priority, application Japan, July 15, 1968, 43/49,028
Int. Cl. F01b *25/06*
U.S. Cl. 415—10 10 Claims



A steam turbine control system including a valve means for regulating the flowrate of steam supplied to the turbine in response to an electric signal is featured by the combination of a servo-motor for driving the valve means upon reception of comparatively high pressure oil as its operative fluid, a servo-valve for distributing the operative fluid to the servo-motor in accordance with the above mentioned electric control signal, a by-pass valve inserted in the fluid path from the servo-valve to the servo-motor for the purpose of operating the valve means in the closing direction in response to a trip signal which supersedes the electric control signal at an emergency, regardless of the distribution of the operative fluid from the servo-valve, and a dump-valve driven by a comparatively low pressure operative fluid for driving the by-pass valve in response to the above mentioned trip signal.

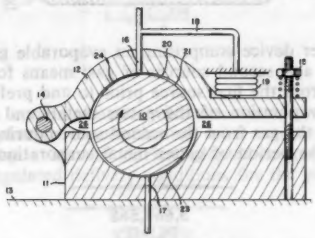
3,669,560
CONTROL DEVICE FOR STOPPING ROTATION OF WATER TURBINE
Asao Oishi and Shozzo Sashino, Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 7, 1970, Ser. No. 78,810
Claims priority, application Japan, Oct. 9, 1969, 44/80,788, 44/80,789
Int. Cl. F01b *25/06*
U.S. Cl. 415—41 2 Claims



The opening of a guide vane is locked or maintained in its present position at the time a water turbine is

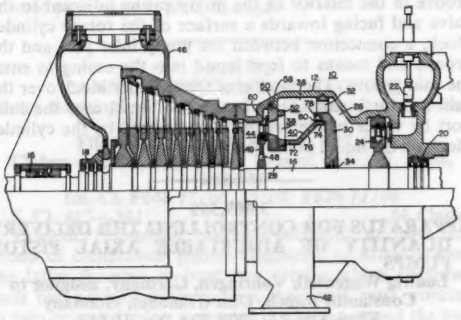
stopped upon removal of a load, and the guide vane is started to be closed after a time interval predetermined by the opening of the guide vane locked or in response to a predetermined rotational speed of the water turbine.

3,669,561
HYDRODYNAMIC PUMP
Richard C. Mott, Harwood Heights, Ill., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Oct. 9, 1970, Ser. No. 79,418
Int. Cl. F01d *1/36;* **F03b** *5/00*
U.S. Cl. 415—90 **10 Claims**



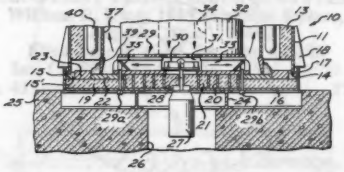
A high pressure, low volume, hydrodynamic pump comprising a sleeve, a shaft rotatable within the sleeve, means to vary the gap between the shaft and the sleeve, and an outlet in the sleeve. When submerged in or otherwise provided with a supply of fluid such as oil, relative motion between the sleeve and the shaft results in the establishment of a hydrodynamic pressure between the sleeve and the shaft which pressure can be increased or decreased by decreasing or increasing the gap between the sleeve and the shaft.

3,669,562
EXTRACTION TURBINE WITH A SERVO ACTUATED BALANCED GRID VALVE FOR EXTRACTION CONTROL
John M. McNally, Wallingford, and Albert H. Molette, Jr., Media, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 12, 1971, Ser. No. 105,798
Int. Cl. F01d *9/00, 1/00, 17/00*
U.S. Cl. 415—159 **11 Claims**



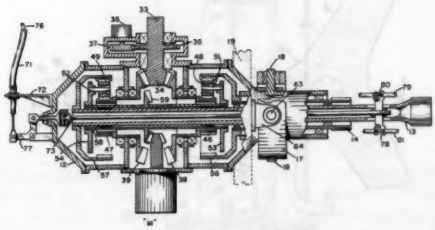
In an extraction turbine provided with a grid valve having a stationary port ring and a rotatable port ring actuated by a servomotor for controlling the flow of a highly pressurized elastic fluid, such as steam, pressure forces on the contacting interfaces of the two rings are minimized by providing an annular balancing member secured directly to the rotatable ring and acted upon by the high pressure elastic fluid in a manner to substantially balance the pressure forces on the rotatable ring, thereby enabling the grid valve to be utilized in higher pressure systems without increasing the effort required to operate the valve.

3,669,563
CENTRIFUGAL FAN
Robert Lee Corbett, Jr., 22732 Lake Road W., Rocky River, Ohio 44224
Filed Feb. 10, 1971, Ser. No. 114,150
Int. Cl. F04d *17/08, 29/26, 29/00*
U.S. Cl. 415—211 **13 Claims**



There is disclosed herein a centrifugal fan for circulating atmosphere gas in an annealing furnace. A circular base plate carries a plurality of radially disposed, upwardly projecting blades, each blade having a main blade portion providing a leading surface tilted backwardly and an upper edge portion curved forwardly with respect to the direction of rotation of the fan. Each blade is reinforced at its trailing side by a support which tilts forwardly and converges upwardly, the upper edge of the support intersecting and being secured to the main blade portion. The fan is disposed within a central opening of a full-flow load support diffuser having an intake opening equal to the diameter of the fan and substantially unrestricted outlet means.

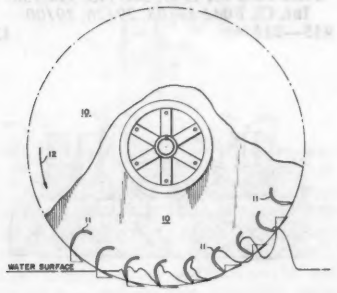
3,669,564
COAXIAL HELICOPTER ROTOR SYSTEM AND TRANSMISSION THEREFOR
Marvin Garfinkle, Cleveland, Ohio, assignor to Helicorporation, Philadelphia, Pa.
Filed Mar. 26, 1970, Ser. No. 22,898
Int. Cl. B64c *27/10*
U.S. Cl. 416—121 **9 Claims**



Disclosed is a helicopter control system having a unitized rotor and transmission assembly for a craft using coaxial counter-rotating rotors. The assembly is gimbal mounted so that the transmission achieves directional

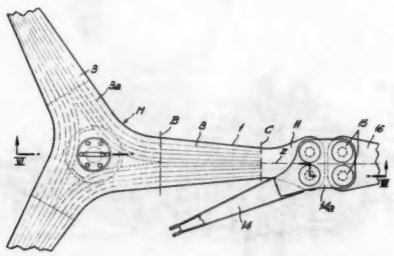
control without altering blade pitch and the rotor head is of simplified construction to achieve collective control of the blades.

3,669,565
IMPULSE TURBINE PROPULSION DEVICE FOR MARINE CRAFT
Melville W. Beardsley, 40 Windward Drive, Severna Park, Md. 21146
Filed Sept. 25, 1970, Ser. No. 75,420
Int. Cl. F04d *17/04*
U.S. Cl. 416—185 **5 Claims**



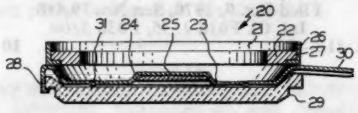
An impulse propulsion wheel for boats and the like having a plurality of blades spaced around the circumference of a wheel and having open spaces between them. The blades being shaped to have at least two distinct radii of curvature on the face of the blade and being mounted to have the greatest curvature nearest the center of the wheel and to have the tip of the blade enter the water at substantially right angles to the surface of the water at the design speed.

3,669,566
ROTOR CONSTRUCTION
Gaston Bourquardez, Aix en Provence and René Louis Coffy, Marseille, France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France
Filed May 15, 1970, Ser. No. 37,826
Claims priority, application France, May 20, 1969, 6916289
Int. Cl. B64c *27/38*
U.S. Cl. 416—134 **18 Claims**



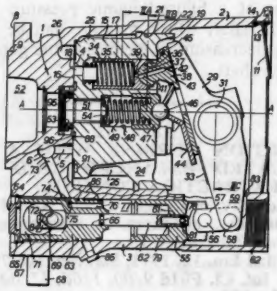
A connecting element particularly useful for connecting a variable pitch rotor to a hub comprises a flexible elongated portion formed of strong and resilient fibres individually enclosed and agglomerated by a vulcanised elastomer.

3,669,567
GETTERING
Paolo Della Porta and Elio Rabusin, Milan, Italy, assignors to S.A.E.S. Getters S.p.A., Milan, Italy
Filed May 4, 1970, Ser. No. 34,319
Claims priority, application Italy, June 14, 1969, 18,187/69, Patent 865,904
Int. Cl. F04b *37/02;* **H01k** *1/52;* **H01j** *7/18, 17/26*
U.S. Cl. 417—48 **22 Claims**



A getter device comprising an evaporable getter metal and first and second sources of gas; means for releasing the gas from the first source prior to and preferably also during evaporation of the getter metal; and means for releasing the gas from the second source during the latter part of the period of getter metal evaporation.

3,669,568
PUMP
Donald Patterson McLeod, Cheltenham, England, assignor to Dowty Technical Developments Limited
Filed May 1, 1970, Ser. No. 33,716
Claims priority, application Great Britain, Mar. 14, 1970, 12,355/70
Int. Cl. F04b *23/14*
U.S. Cl. 417—203 **7 Claims**

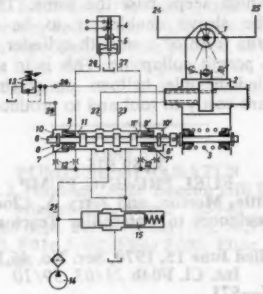


A swash plate pump having means to boost liquid into the low pressure port of the pump which comprises, a groove in the interior of the pump casing adjacent to the valve and facing towards a surface of the rotary cylinder block, a connection between the pump inlet port and the groove and means to feed liquid into the casing to enter the said groove. The motion of the cylinder block over the said groove is arranged to urge the liquid into the inlet port by virtue of the viscous drag exerted by the cylinder block on the liquid in the groove.

3,669,569
APPARATUS FOR CONTROLLING THE DELIVERY QUANTITY OF ADJUSTABLE AXIAL PISTON PUMPS
Ludwig Wagenseil, Vohringen, Germany, assignor to Constantin Rauch, Ulm (Danube), Germany
Filed Apr. 24, 1970, Ser. No. 31,563
Claims priority, application Germany, Apr. 25, 1969, P 19 21 298.7; Feb. 2, 1970, P 20 04 577.6
Int. Cl. F04b *1/26*
U.S. Cl. 417—222 **5 Claims**

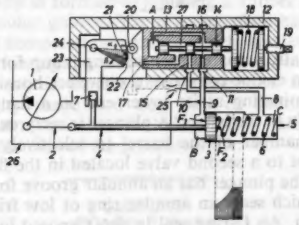
An apparatus for regulating the delivery quantity of adjustable piston pumps, including a control apparatus

constituted of a two-chamber slide valve permitting control over the pumps without varying the auxiliary hydraulic fluid pressure. One of the chambers of the slide



valve is in communication with a servo valve, and the other chamber in communication with a control circuit regulated by a control device adapted to provide the required regulated delivery conditions for the pumps.

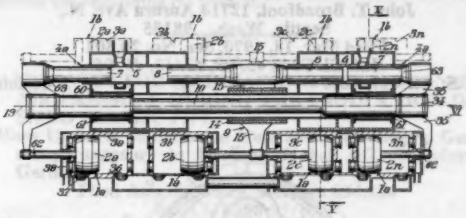
3,669,570
POWER REGULATION FOR FLUID MACHINES
Conrad Richard Himmler, Les Essarts le Roi, France, assignor to Mannesmann-Meer Aktiengesellschaft, Moenchengladbach, Ohlerkirchweg, Germany
Filed Mar. 9, 1970, Ser. No. 17,444
Int. Cl. F04b *1/30, 13/64*
U.S. Cl. 417—222 **6 Claims**



A swash plate fluid pump or motor is controlled for constant power through fluid regulation control devices operating with feedback which provides for hyperbolic regulating characteristics as between fluid flow and operating pressure. The regulator includes a control piston and a regulator valve piston in a casing the relative position of which is determined through feedback from the control piston-swash plate linkage.

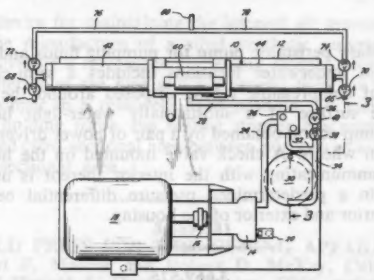
3,669,571
TANDEM, FREE-PISTON MACHINE
Henry Benaroya, 41 Boulevard du Commandant Charcot, Neuilly-sur-Seine, France
Filed Dec. 23, 1969, Ser. No. 887,637
Claims priority, application France, Dec. 27, 1968, 181,237
Int. Cl. F04b *17/00, 35/00;* **F02b** *71/00*
U.S. Cl. 417—341 **16 Claims**

Tandem, free-piston machine including at least one group of compressor pistons connected to drive pistons, the latter forming at least two groups which comprise each two pairs of drive pistons, these two pairs working in two drive cylinders arranged in alignment and the two drive pistons of each pair working in opposition in the corresponding drive cylinder, the outer drive portions of said two pairs being connected by a central rod and the inner drive pistons of said two pairs being connected by a linking element mounted slidably on said central rod, so that the outer drive pistons and the inner drive pistons form, respectively, an outer movable train and an inner movable train reciprocating in opposition, means of



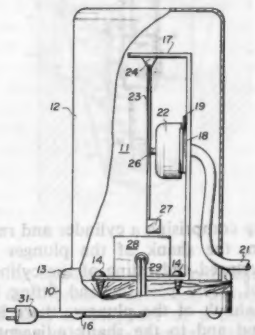
synchronization being provided between the outer movable train and the inner movable train.

3,669,572
CONSTANT FLOW PUMPING SYSTEM
William R. King, 1909 Sunshine Square, Longview, Tex. 75601
Filed June 8, 1970, Ser. No. 44,383
Int. Cl. F03b; F04b *9/08, 17/00, 35/00*
U.S. Cl. 417—390 **17 Claims**



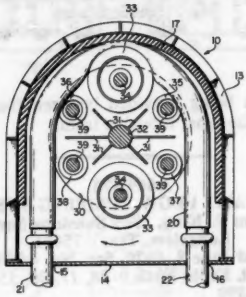
A system for providing liquid at high pressure at a substantially constant flow rate including a fluid powered pump operated by power fluid supplied at a lower pressure, the power fluid also being supplied in a desired proportion to an accumulator which discharges to the fluid powered pump at the beginning of each stroke of the pump.

3,669,573
NOISELESS AQUARIUM PUMP
David Levensohn, New York, N.Y., assignor to Continental Pet Innovations, Inc.
Filed Oct. 23, 1970, Ser. No. 83,312
Int. Cl. F04b *35/04, 17/04;* **H02k** *33/00, 35/00*
U.S. Cl. 417—416 **5 Claims**



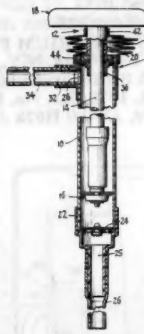
A vibrator pump is disclosed which is mounted on a rigid base member for absorbing vibrations resulting in a quieter running pump.

3,669,574
DEEP WATER PUMPING OF FLUIDS AND SEMI-FLUIDS
John T. Broadfoot, 12714 Aurora Ave. N., Seattle, Wash. 98155
Filed Mar. 18, 1970, Ser. No. 20,501
Int. Cl. F04b *43/08, 43/12, 45/06*
U.S. Cl. 417—477 **3 Claims**



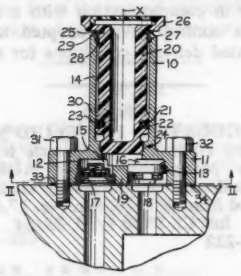
A rotary peristaltic pump for pumping fluids and semi-fluids in underwater locations includes a semi-circular piece of compressible tubing disposed around the inner arcuate surface of a substantially water-tight housing with pump action obtained by a pair of power driven compression wheels. A check valve mounted on the housing and communicating with the interior thereof is used to maintain a predetermined pressure differential between the interior and exterior of the housing.

3,669,575
SEALED PLUNGER-TYPE PUMP
Frank S. Beckerer, 134 Far Horizons Drive, Easton, Conn. 06612
Filed Mar. 24, 1970, Ser. No. 22,165
Int. Cl. F04b *39/10*
U.S. Cl. 417—555 **6 Claims**



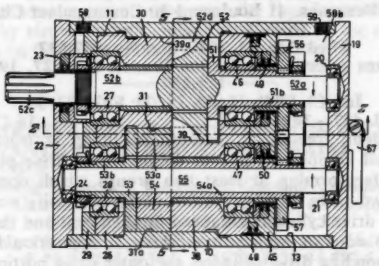
A hand pump comprising a cylinder and reciprocatable plunger therein, the shank of the plunger passing out through an apertured end fitting of the cylinder. To prevent leakage of liquid past the end fitting between the latter and the shank of the plunger, there is secured to the cylinder end and to the shank adjacent the handle thereof a tough, paper-thin, impervious, flexible and collapsible plastic sleeve having its ends respectively connected to the cylinder and hub of the handle. During reciprocation of the plunger, the sleeve experiences a random folding and unfolding. The sleeve thus acts somewhat like a water-tight container, supplementing the packing around the plunger shank and containing any liquid which seeps past the same. The paper-thin nature of the sleeve enables it to be economically produced in the form of a smooth cylinder, since its thin walls readily permit collapsing. This is in sharp contrast to thick-walled flexible bellows or accordion-like devices which are costly to tool and to produce.

3,669,576
FUEL PRIMING PUMP
Joseph P. Little, Morton, and Jerry A. Clouse, Washington, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed June 15, 1970, Ser. No. 46,117
Int. Cl. F04b *21/03, 39/10*
U.S. Cl. 417—571 **1 Claim**



A manually actuated fuel priming pump for an internal combustion engine comprises a one-piece housing having a barrel terminating at its lower end in a flange disposed transversely to the barrel. A plunger is reciprocally mounted in a chamber of the barrel to selectively pump fuel from a first to a second valve located in the flange of the housing. The plunger has an annular groove formed thereabout which seats an annular ring of low friction material therein. An O-ring seal is also disposed in the groove to urge the annular ring into intimate contact with wall portions defining the chamber.

3,669,577
VARIABLE HIGH SPEED GEAR PUMP
Swan G. Swanson, Rte. 1, Rock, Mich. 49880
Filed Dec. 31, 1970, Ser. No. 103,263
Claims priority, application Sweden, Jan. 2, 1970, 32/70
Int. Cl. F01c *1/18, 21/16;* **F04c** *15/04*
U.S. Cl. 418—21 **9 Claims**



A gear type fluid pump having pumping gears provided with boosting channels and cooperating head channels which supply fluid from the pressure side of the pump

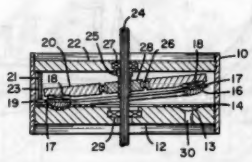
via the boosting channels to the mating pockets of the associated pumping gear to thereby improve the efficiency of the pump. The oil admitted into and carried in the boosting channels is slung radially outwardly therefrom by centrifugal force into the gear pockets of the mating gear to thereby reduce the tendency of the fluid being pumped to be vaporized in these pockets as the gears disengage on the inlet side of the pump, thus reducing gassification in the pump and wear on the gear pumping teeth.

3,669,578

PUMPING APPARATUS

Frank J. Nameny, 5320 Beacon Hill Road, Minnetonka, Minn. 55343

Filed Sept. 21, 1970, Ser. No. 73,970
Int. Cl. F01c 5/00; F04c 5/00; F03c 3/00
U.S. Cl. 418—45 8 Claims



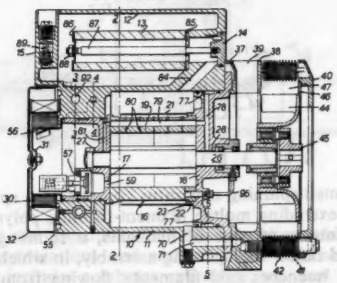
A pump for fluids and gases is disclosed in which the fluid is squeezed through an annular cavity by a rotating pressure plate eccentrically driven by a drive shaft. The annular cavity is formed by bonding a rubber membrane over an annular groove. The pressure plate has an annular toroidal compression member which gyrates about the drive shaft forcing the membrane into the annular cavity. The membrane is protected from frictional forces by a special cavity shape and dual sets of bearings in the pressure plate. Variations include driving a second pump from the other side of the pressure plate.

3,669,579

COMPRESSORS

Alan Carter, Eastham, near Tenbury Wells, England, assignor to The Hydrovane Compressor Company Limited, Redditch Worcestershire, England

Filed July 28, 1970, Ser. No. 58,764
Claims priority, application Great Britain, July 29, 1969, 38,000/69
Int. Cl. F01c 21/04; F04b 49/00; F04c 29/02
U.S. Cl. 418—83 6 Claims



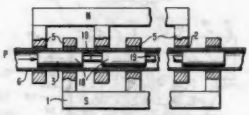
A compressor of the eccentric vane type in which a mixture of compressed air and oil is delivered through a number of ports distributed along the length of the compressor stator into a chamber which affords a sump and a deflecting wall on which the oil is deposited. Thereafter the compressed air passes through a separator which removes the remaining oil from it.

3,669,580

APPARATUS FOR MAINTAINING THE INTERNAL AIR PRESSURE DURING THE PRODUCTION OF SIZED PLASTIC PIPE

Hans Umbach, Stadeln, and Hans Jena, Nuremberg, Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

Filed Aug. 29, 1969, Ser. No. 854,224
Int. Cl. B29d 23/00
U.S. Cl. 425—3 12 Claims



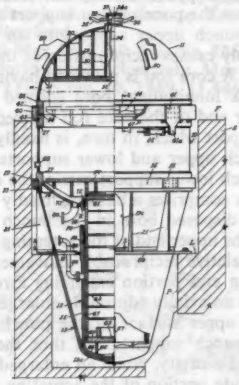
A device for maintaining the internal air pressure during the manufacture of a sized synthetic polymer pipe by providing a ferromagnetic sealing stopper disposed in the interior of the pipe and a magnetic field for holding the stopper in a relatively fixed position. To yield sufficient holding force, the sealing stopper has portions of reduced cross-sectional area between portions of expanded cross-sectional area.

3,669,581

MOLD PRESS FOR TIRE CURING APPARATUS

Robert F. Maurer and Robert D. McVay, Columbus, and Donald L. Hummel, Canton, Ohio, assignors to United McGill Corporation, Columbus, Ohio

Filed Jan. 8, 1971, Ser. No. 105,035
Int. Cl. B29h 5/20
U.S. Cl. 425—34 9 Claims



A tire curing apparatus of the pot-heater type is provided with a mold-press construction incorporating a conically shaped shell for support of a fluid-ram assembly which results in a substantial reduction in the total weight of the apparatus without a corresponding decrease in the structural strength. The frusto-conically shaped shell and ram assembly are cooperatively configured to provide a

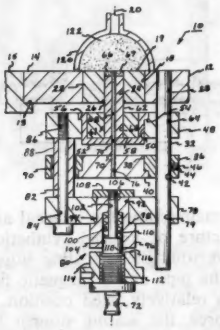
single-point suspension for the ram-assembly which uniformly distributes stress forces throughout the structure and facilitates precise alignment of the ram assembly with the press body.

3,669,582

DIE AND PUNCH ASSEMBLY FOR COMPACTING POWDER MATERIAL HAVING DEFLECTION COMPENSATOR

Joseph E. Smith, Birmingham, Mich., assignor to Wolverine-Pentronix, Inc., Lincoln Park, Mich.

Filed Jan. 25, 1971, Ser. No. 109,376
Int. Cl. B30b *11/02, 15/22*
U.S. Cl. 425—78 16 Claims



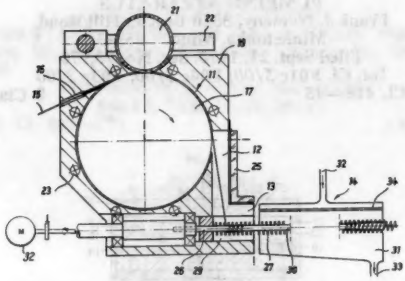
A die and punch assembly for use on a powder compacting press for making articles compacted from a powder and including a deflection compensator which allows the punch to remain engaged with and support the compacted article after the compacting pressure applied to the article is relieved. The assembly comprises a die plate appropriately mounted to the press and includes one or more die cavities, each of which has a punch slidably and snugly disposed therein. The punch is actuated by a punch upper support which, in turn, is slidably carried by a pair of posts extending below the die plate to permit reciprocable movement of the punch within the die cavity. A second punch support slidably carried by the posts is positioned below the punch upper support and operatively connects the punch upper support to an actuating ram which selectively causes reciprocation of the punch within the die cavity. A core rod is provided having one end disposed within a longitudinal bore formed in the punch, while the other end of the core rod is fixedly mounted to a core rod support which, in turn, is fixedly supported between the punch upper and lower supports by the pair of posts. The punch lower support carries the deflection compensator which comprises a bushing fixedly mounted within a centrally disposed bore in the punch lower support and in which the upper end of the actuating ram is slidably mounted for relative reciprocable movement. The actuating ram has an end portion extending through the bushing and carries an axially adjustable enlarged head adapted to engage the upper surface of the punch lower support to move the punch supports and thus the punch downwardly in the die cavity, while an enlarged axially adjustable intermediate portion of the actuating ram is adapted to engage the lower portion of the bushing to impart an upwardly directed force to the punch supports to drive the punch upwardly into the die cavity to compact the powder material into a compacted article. The punch actuating mechanism is provided with a spring loaded lost motion link to bias the punch end into engagement with the compacted article to prevent damage thereto when the punch actuating ram is retracted to relieve the compacting pressure applied to the article during compaction.

3,669,583

APPARATUS FOR MANUFACTURING SPIRALS FROM THREADS OF SYNTHETIC THERMOPLASTICS MATERIAL

Guido Negro, Neuffen, Germany, assignor to Bielomatik Leuze & Co.

Filed Aug. 31, 1970, Ser. No. 68,168
Claims priority, application Germany, Sept. 2, 1969, P 19 44 371.1–16
Int. Cl. B29c *17/00*
U.S. Cl. 425—214 10 Claims



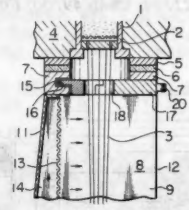
This invention concerns an apparatus for manufacturing a spiral from a thread of synthetic thermoplastics material. The apparatus includes a housing defining a cylindrical chamber having a drum rotatably mounted therein for continuous rotation. As distinct from prior arrangements, the housing is heated and includes a spirally-shaped thread guide groove in the cylindrical surface of the chamber and the drum has a smooth surface.

3,669,584

MELT-SPINNING APPARATUS

Seibi Yamada and Haruki Takizawa, Matsuyama-shi, Japan, assignors to Teijin Limited, Osaka, Japan

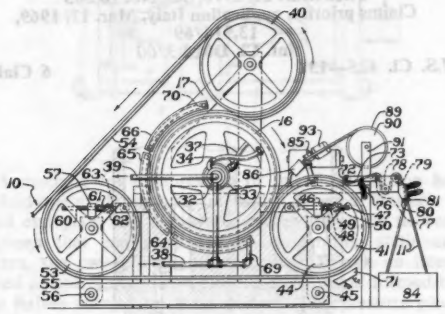
Filed Oct. 22, 1969, Ser. No. 868,407
Claims priority, application Japan, Oct. 24, 1968, 43/77,475
Int. Cl. D01d *13/02*
U.S. Cl. 425—72 3 Claims



In a melt-spinning apparatus comprising a spinning assembly extruding molten filament-forming polymeric materials into a number of filaments, a spinning chimney provided below the spinning assembly, in which a stream of fluid quenches said filaments, flowing from the back part of the chimney to the front opened part thereof, and a shutter provided between said spinning assembly and spinning chimney, said shutter having an opening through which extruded filaments pass; said shutter is divided into at least two parts within a plane of the shutter in order to facilitate a threading operation at the beginning of

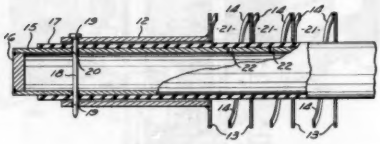
the spinning operation and an observation of the spinneret surface during the spinning operation by moving one of said parts.

3,669,585
CONTINUOUS STRIP MOLDING APPARATUS
Carroll P. Krupp, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed Feb. 26, 1970, Ser. No. 14,553
Int. Cl. B29f 3/00
U.S. Cl. 425—109 3 Claims



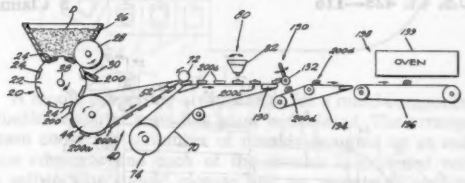
The continuous molding of an elastomeric sealing strip on a tape for a slide fastener in which a preformed strip of elastomeric material is applied to a tape as it is continuously fed into a mold cavity on the periphery of a rotating heated curing drum. The tape and preformed strip are enclosed in the mold cavity by a metal belt wrapped around a portion of the curing drum and driven at the same speed as the drum. The molded elastomeric sealing strip and tape are enclosed in the mold cavity at a molding temperature for a period of time necessary to cure the sealing strip on the tape after which the tape is released and carried away from the curing drum.

3,669,586
APPARATUS FOR MAKING FLEXIBLE TUBING WITH ANNULAR CORRUGATIONS
Vance M. Kramer, Perrysburg, Ohio
(% Crushproof Tubing Co., McComb, Ohio 45858)
Filed June 17, 1970, Ser. No. 46,865
Int. Cl. B29c 17/00
U.S. Cl. 425—109 4 Claims



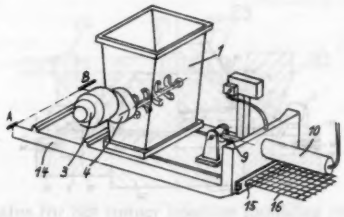
Method and apparatus for making rubber tubing with annular corrugations and uniform wall thickness. The apparatus includes a tubular cylindrical mandrel adapted to receive a sleeve of extruded rubber, and an axially extensible external form adapted to be received over the mandrel and sleeve. The form includes a plurality of axially spaced parallel discs each having a circular opening coaxial with the respective circular openings of the other discs, and a plurality of resilient extensible spring segments, each of which connects together two adjacent discs in a manner to permit extension of the segment to increase the axial spacing between the respective two discs. The mandrel has radial ports so that the sleeve may be expanded by internal pressure to make a preliminary impression in the uncured rubber caused by the edges of the circular openings of the discs.

3,669,587
APPARATUS FOR FILLING MOLDED COOKIES
Charles R. Werner, Grand Rapids, Mich., assignor to Werner Lehara, Inc., Grand Rapids, Mich.
Filed Mar. 16, 1970, Ser. No. 19,966
Int. Cl. A21c 00/00; A23g 3/00
U.S. Cl. 425—112 23 Claims



An apparatus and process for making filled, molded cookies, the apparatus combining a depositing hopper and nozzle, and a folding apparatus, with an embossing die roller. The combination is made possible by inverting means for inverting the embossed patty prior to the depositing of the filling, so that the depositing occurs on the bottom of the cookie patty. The inverting means is preferably a belt adapted to grip the bottom of the patties so as to carry them with the pattern side down and then deposit them on a second belt for the filling and folding operations.

3,669,588
APPARATUS FOR MANUFACTURING CONSTRUCTION ELEMENTS
Fernando Cavalli, Morbio Superiore, and Piero Cretti, Vacallo, Switzerland, assignors to Eros Camponovo, Chiasso, Switzerland
Filed May 19, 1969, Ser. No. 825,744
Claims priority, application Italy, May 20, 1968, 16,711/68; Jan. 15, 1969, 11,546/69
Int. Cl. B29b 7/22
U.S. Cl. 425—113 3 Claims



Apparatus for manufacturing construction elements in the form of plates or panels or the like, utilizing cement conglomerate and granules of inert material, comprises a frame carrying a hopper and a reciprocating plunger for compressing material that emerges downwardly from the hopper. The plunger has a downwardly forwardly inclined leading edge, and the resistance of the compressed

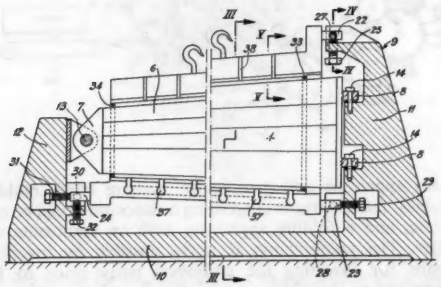
material to the plunger forces the whole machine rearwardly over its supporting surface instead of forcing the compressed material forwardly. Reinforcing elements can be introduced into the material through a slot in the plunger.

3,669,589

APPARATUS FOR THE PRODUCTION OF MEMBERS HAVING A SMOOTH SHEATHING AND OF ACCURATE SHAPE, AND THEIR APPLICATIONS TO THE STRUCTURAL ELEMENTS OF SUBMERGED FOILS

Andre Jules Edmond Bordat, Paris, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Mar. 31, 1970, Ser. No. 24,200
Claims priority, application France, Apr. 11, 1969, 6911246
Int. Cl. B29c *1/00*
U.S. Cl. 425—116 5 Claims



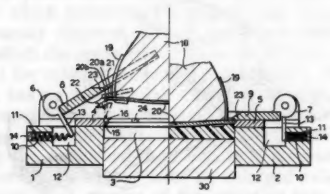
The disclosure is particularly concerned with the production of submerged struts for hydrofoil craft. The struts are produced by sheathing a basic element with plastics. The sheathing is carried out in a mould which has at least one degree of freedom in relation to the structure to be sheathed.

3,669,590

APPARATUS FOR MAKING SHOES

Antonio Nova, Oscar Nova, and Renzo Nova, Legnano, Milan, Italy, assignors to Officine Meccaniche Antonio Nova, Legnano, Milan, Italy

Filed Mar. 30, 1970, Ser. No. 23,658
Claims priority, application Italy, Apr. 11, 1969, 51,395/69
Int. Cl. B29f *1/12*
U.S. Cl. 425—119 1 Claim



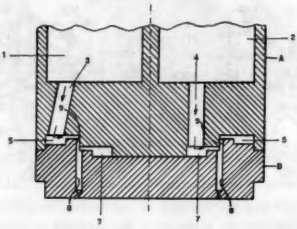
The apparatus is provided with a molding chamber having sidewalls with a ledge formed thereon about the periphery of the chamber. A last having the upper portion of the shoe including an insole with a projecting edge is placed over the chamber such that the projecting edge of the insole rests on the ledge. Hooked pins are provided on the last for holding the insole in proper position prior to placement on the ledge. When the insole is resting on the ledge, a pair of plates are pivoted into engagement with the upper surface of the projecting edge to clamp the insole over the molding chamber. The edges of the clamping plate are provided with notches to provide clearance for the hooked pins so that the pins will not interfere with the clamping operation.

3,669,591

APPARATUS FOR PRODUCING COMPOSITE FIBERS

Enzo Fermi and Francesco Sassanelli, San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., Milan, Italy

Filed Mar. 11, 1970, Ser. No. 18,563
Claims priority, application Italy, Mar. 11, 1969, 13,914/69
Int. Cl. D01d *3/00*
U.S. Cl. 425—131 6 Claims



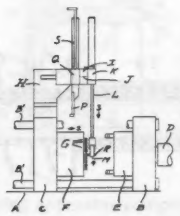
A spinning head for melt spinning of composite filaments comprised of two polymers of equal semi-circular cross-section in which the mating faces of a distribution plate and a spinneret plate form two separate annular cavities each communicating with a different polymer supply contained in the distribution plate. A plurality of extrusion holes in the spinneret plate have their upper end portions of semi-circular cross-section communicating with one of the annular cavities and the remaining portions of circular cross-section communicating with the other annular cavity.

3,669,592

INJECTION MOLDING MACHINES

Manuel S. Miller, Bethel, Vt., assignor to G-W Plastic Engineers, Inc., Bethel, Vt.

Filed Apr. 28, 1970, Ser. No. 32,567
Int. Cl. B29c *7/00*; B29f *1/14*
U.S. Cl. 425—155 4 Claims

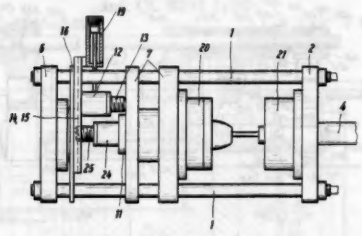


Mechanism is provided for removing the runner and sprue assembly from the mold to a point of disposal apart from the work, in timed relation to the molding cycle, preferably in a unitary combination with a knock-off device carried with such mechanism on a common traversable support, and particularly, but not exclusively, adapted for operation with submarine gated or back gated molds.

3,669,593
MOLD-CLOSING MEANS FOR MOLDING MACHINES

Wilhelm Cyriax, W.R. Neustadterstrasse 81, Kottingbrunn, Austria

Filed Feb. 10, 1970, Ser. No. 10,235
Int. Cl. B29f *1/06*
U.S. Cl. 425—186 10 Claims

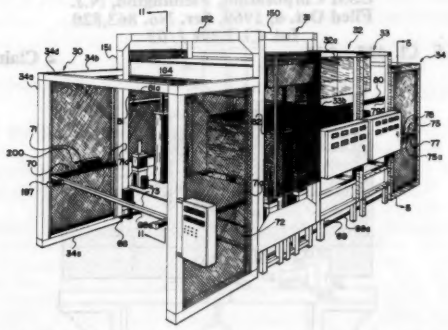


A machine for compression or injection molding has a fluid-operated pressure intensifier inserted between a fixed end plate and a movable platen riding on tie bars between that end plate and a co-operating stationary platen, the pressure intensifier acting through an interposed pressure piece upon closure of the mold formed by two halves carried on these platens. The pressure piece consists of two parts of substantially the same axial length, either or both of which may be extensible, at least one of which is slidably guided for transverse movement out of alignment with the other part preparatorily to an opening of the mold. With the mold open, the two parts lie alongside each other in the space between the end plate and the movable platen.

3,669,594
MODULE THERMOFORMING MACHINE

Gaylord W. Brown, Beaverton, Edward J. Russell, Gladwin, and Charles E. Howe and Bradley A. Schnepp, Beaverton, Mich., assignors to Koehring Company, Milwaukee, Wis.

Filed Apr. 9, 1970, Ser. No. 26,840
Int. Cl. B29c *17/03, 17/04*
U.S. Cl. 425—186 53 Claims

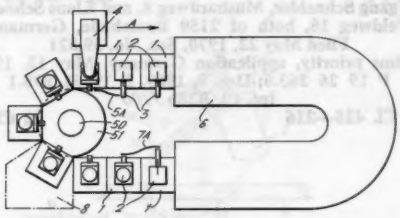


A synthetic plastic sheet thermoforming machine, preferably of modular construction, and incorporating elevator, heating, molding, and Lowerator stations. Sheet carrying carts move through the machine in a circuitous path from a loading station at which unformed sheets are loaded to the carts to an unloading station at which formed sheets are removed from the carts.

3,669,595
MOULDING APPARATUS

Bernd Zippel, Langenhain, and Alfred Schlieckmann, Eschwege, Germany, assignors to Richard Zippel & Co. KG, Eschwege, Germany

Filed Feb. 20, 1970, Ser. No. 12,968
Claims priority, application Germany, Feb. 22, 1969, P 19 09 050.7
Int. Cl. B29c *3/02*
U.S. Cl. 425—188 19 Claims

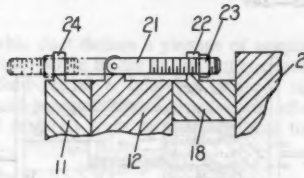


A mould processing arrangement for a multi-component plastics material moulding plant is disclosed. The arrangement comprises a number of moulds mounted on an endless conveyor and each of the moulds is provided with a self-locking mould closure and an associated opening and closing mechanism, which is operated by means of an actuating lever. The conveyor is intermittently driven so as to traverse each of the moulds successively through a mould filling station, a curing station and a mould removal station. A pair of mould closure actuating devices are located adjacent the conveyor. The first of these devices is located down-stream of the filling station and is arranged to engage the actuating levers of successive mould closures so as to close and lock the respective moulds. The second actuating device is located up-stream of the removal station and is arranged to engage the actuating levers so as to open each mould before it reaches the mould removal station.

3,669,596
APPARATUS FOR HOT RUNNER INJECTION MOULDING

Anthony James Savory, Handsworth Wood, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

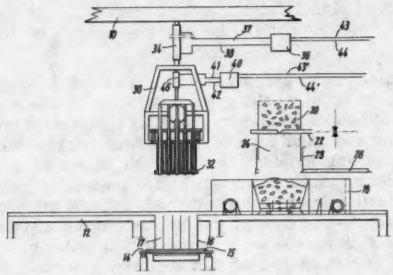
Filed Dec. 14, 1970, Ser. No. 97,968
Claims priority, application Great Britain, Dec. 9, 1969, 59,936/69
Int. Cl. B29c *1/00*
U.S. Cl. 425—192 8 Claims



Apparatus for hot runner injection moulding comprises a fixed die part and a movable die part, the fixed die part and the movable die part defining therebetween a die cavity. An injection nozzle is carried by the fixed die part and a hot runner box having therein a passage communicating with the bore in the injection nozzle so that in use molten synthetic resin flows from a reservoir through the passage and the bore in the injection nozzle into the die cavity. Further the apparatus includes releasable latch means movable between first and second

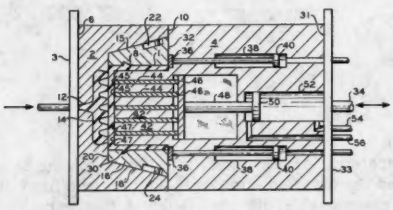
operative positions, such that in the first operative position the latch means secures the fixed die part to the hot runner box and in the second operative position the latch means secures the fixed die part to the movable die part so that the hot runner box can be removed without disturbing the fixed die part.

3,669,597
APPARATUS FOR THE PRODUCTION OF SMALL CONCRETE ELEMENTS
Wolfgang Schneider, Mushardweg 8, and Klaus Schneider, Feldweg 18, both of 2150 Buxtehude, Germany
Filed May 22, 1970, Ser. No. 39,821
Claims priority, application Germany, May 12, 1969, P 19 26 263.6; Dec. 9, 1969, P 19 61 098.1
Int. Cl. B28b 7/00
U.S. Cl. 425—216 **12 Claims**



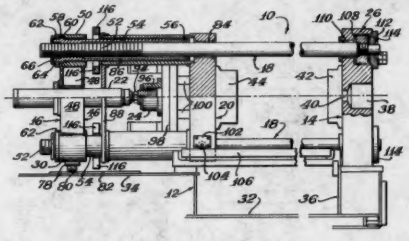
Manufacturing of small concrete elements is improved by compacting the concrete mix in a mould and removing any possible filling surplus during compaction, the surplus being removed in a plurality of steps. A novel apparatus for the production of small concrete elements comprises an upwardly open mould and a press ram which is movable in a vertical direction and the ram plate of which may cover the free upper cross section of the mould said ram plate being provided with means for the removal of a filling surplus from the mould, which means is movable in a vertical direction independently of the ram.

3,669,598
APPARATUS FOR MOLDING AND EJECTING PLASTIC ARTICLES
Alvin S. Tucker, Bartlett, Ill., assignor to Phillips Petroleum Company
Filed Nov. 26, 1969, Ser. No. 880,341
Int. Cl. B29f 1/00, 1/14
U.S. Cl. 425—249 **7 Claims**



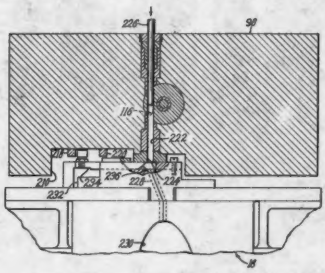
Method and apparatus for molding and ejecting plastic articles having protrusions extending from a base of the article. Movable blades between the core elements assure proper filling of the mold and function to eject the molded articles from the mold core section.

3,669,599
HYDROMECHANICAL CLAMP
Theodore O. Snider, Dayton, Ohio, and Michael D. Teeple, Fountain City, Ind., assignors to National Automatic Tool Company, Inc.
Filed Dec. 8, 1970, Ser. No. 96,056
Int. Cl. B29f 1/00
U.S. Cl. 425—242 **10 Claims**



An injection molding machine having mold halves which receive pressurized plastic therein. The machine includes a base, a first platen fixed on the base, for holding one of the mold halves, and a back plate mounted on the base and spaced from the said first platen. Tie rods pass between and are mounted to the first platen and the back plate. A second platen is movably carried on the tie rods between the first platen and the back plate and holds the other of the mold halves. Projecting hollow members on the back plate extend toward the moving platen and totally surround the tie rods. Open portions are provided on the second platen for receiving the projecting members when the mold halves are in the open position. Drive means advance the second platen toward the first platen for closing the mold halves. Blocking members are interposed between the projecting members and the moving platen when the mold halves are in the closed position. Load cells are provided on each of the tie rods for clamping the mold halves together during injection of pressurized plastic, the load cells driving the back plate, the projecting members, and the second platen with one mold half thereon into clamping relationship with the first mold half on the fixed platen.

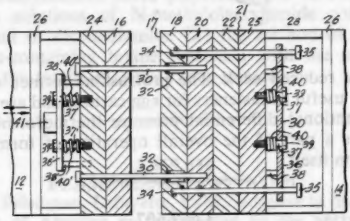
3,669,600
MOLDING MACHINERY
George F. McLean, Jr., Middleton, Mass., assignor to USM Corporation, Flemington, N.J.
Filed Oct. 6, 1969, Ser. No. 863,820
Int. Cl. B29f 1/03
U.S. Cl. 425—245 **2 Claims**



Machinery for molding articles including a device for metering, mixing and dispensing a measured quantity of multiple component mixture to a plurality of molds. The dispensing apparatus and molds are provided with cooperative elements effective whereby the sprue passage

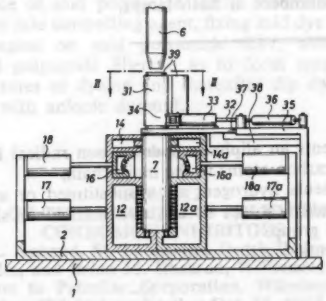
of the dispensing device is automatically self-cleaning after each shot of material.

3,669,601
APPARATUS FOR INJECTION MOLDING
Bruno Lainesse, 1010 Boule Douville, St. Hyacinthe, Quebec, Canada
Filed Sept. 30, 1970, Ser. No. 76,724
Int. Cl. B29f *1/00*
U.S. Cl. 425—249 **7 Claims**



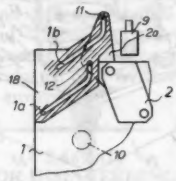
An injection molding machine incorporating at least two pairs of mating molding dies sandwiched between a pair of press platens, the extruder being provided with a reciprocal manifold having nozzles to cooperate with each of the pairs of molds, the manifold being movable to an advanced position for injection and to a retracted position to permit opening of the mold pairs.

3,669,602
APPARATUS FOR FILLING CONTAINERS OF THERMOPLASTIC SYNTHETIC MATERIAL
Gerhard Hansen, 47 Hofener Strasse, D7013 Oeffingen Kreis Waiblingen, Germany
Filed May 12, 1970, Ser. No. 36,549
Claims priority, application Germany, May 13, 1969, P 19 24 338.0
Int. Cl. B29c *5/06*; B65b *5/02*
U.S. Cl. 425—317 **8 Claims**



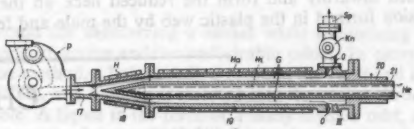
The invention concerns an apparatus for the production, filling and closing of a container made from thermoplastic synthetic material, having a container moulding device and having a filling mandrel adapted to be raised and lowered. The apparatus has a grab device for the reception of pieces, particularly elongate pieces of filling material which is adapted to pivot above the container located in the moulding device and serves to feed the filling material into the container.

3,669,603
DEVICE FOR PRODUCING HOLLOW ARTICLES FROM THERMOPLASTIC SYNTHETIC MATERIAL
Wilhelm Keller, Karlsruhe-Bergwaldsiedlung, and Peter Kallenowski and Peter Schmidt, Ettlingen, Germany, assignors to said Wilhelm Keller and said Peter Kallenowski
Filed Apr. 30, 1970, Ser. No. 33,391
Claims priority, application Germany, Apr. 30, 1969, P 19 22 090.7
Int. Cl. B29d *23/03*
U.S. Cl. 425—326 **4 Claims**



A device for producing hollow articles such as bottles, cans and the like made of thermoplastic material by the blowing process is provided with a mold which is moved from the spray nozzle at a receiving station to an article discharge station. The mold is connected at two spaced points with levers the far ends of which are operatively connected with cam grooves or with cam tracks on the machine frame so that the mold is initially moved substantially vertically away from the spray nozzle and then laterally or inclined toward one side toward the article discharge station.

3,669,604
APPARATUS FOR PROCESSING FLOWABLE PARTICULATE SOLID MATERIAL
Franz P. Nebel, Muhlberg 11, A5132 Geretsberg, Austria
Filed May 19, 1970, Ser. No. 38,688
Claims priority, application Germany, May 23, 1969, P 19 26 371.9
Int. Cl. B29f *3/06*
U.S. Cl. 425—379 **4 Claims**

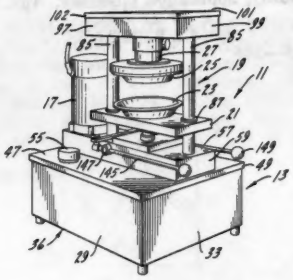


A heatable duct defines a passage of annular cross-section. A rotary piston feeder has an outlet connected to said passage. Said feeder is operable to force said material through said passage. Shaping means are arranged to receive said material from said passage and to shape said material.

3,669,605
HYDRAULIC PRESS
Arthur J. Reilly, 1232 59th St., Downers Grove, Ill. 60515
Continuation of abandoned application Ser. No. 842,651, July 17, 1969. This application Mar. 8, 1971, Ser. No. 122,194
Int. Cl. B30b *11/04*; A21c *11/00*
U.S. Cl. 425—398 **8 Claims**

A hydraulically operated pie tart and pastry shell forming press. The hydraulic cylinder, reservoir, pump and hydraulic conduits are located in the base of the press

below the forming area to prevent contamination of the pastry by the hydraulic fluid. Fluid flow to and from the hydraulic cylinder is controlled by a valve which is operated by a pair of levers, both of which must be manipulated for proper cycling of the press. The press has a die support plate which is bearing guided on squared columns



to insure uniform, accurately formed shells. A replenishing circuit provides high speed cycling of the press with a low pressure return stroke for operator safety. Thermostatically operated, electrical heaters are provided in a fixed die head to heat one of the replaceable dies by conduction.

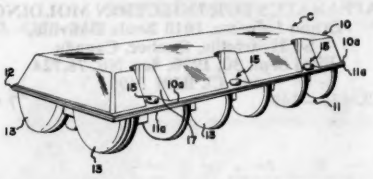
3,669,606

APPARATUS FOR FORMING PROTRUSIONS WITH ENLARGED HEAD PORTIONS IN THERMOPLASTIC SHEET MATERIAL

Gaylord W. Brown, Beaverton, Mich., assignor to Koehring Company, Milwaukee, Wis.

Filed Feb. 20, 1969, Ser. No. 800,844
Int. Cl. B29c *17/03*
U.S. Cl. 425—398 **20 Claims**

Methods and apparatus for forming protrusions with enlarged heads in thermoplastic synthetic plastic sheets wherein a male part on one die enters a female part on another die having a stretchable, resilient, bell-shaped liner with a reciprocable bottoming pin therein which is pushed inwardly by the male die part to distort the liner so that the outer portions of the side wall of the liner are collapsed inwardly and form the reduced neck on the protrusion formed in the plastic web by the male and female parts. The side wall of the liner is shaped to form a button-shaped head in the plastic web when the pressure of the descending male die on the sheet assists in moving outer portions of the side wall of the liner inwardly to



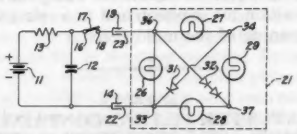
form the reduced neck. The protrusions formed are particularly useful as fasteners for egg cartons and are formed in conventional differential pressure thermoforming machines as a part of the overall operation of forming the egg carton itself.

3,669,607

SIMPLIFIED DIODE CIRCUIT FOR SEQUENTIALLY FLASHING PHOTOFLASH LAMPS

Sang-Chul Kim, Cleveland Heights, Ohio, assignor to General Electric Company

Filed Jan. 7, 1971, Ser. No. 104,653
Int. Cl. F21k *5/02*
U.S. Cl. 431—95 **12 Claims**



A simplified diode type of circuit for causing sequential flashing of photoflash lamps from firing pulses of electrical energy. The basic circuit consists of four flash lamps connected in series in a closed electrical loop. Diodes are connected "criss-cross" between diagonally opposite lamp junctions of the series loop, and the circuit is adapted for connection to a source of firing pulses across one of the flash lamps. Circuit modifications are disclosed for different numbers of flash lamps.

CHEMICAL

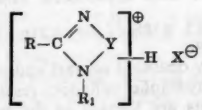
3,669,608

PROCESS FOR COLORING NATURAL AND SYNTHETIC POLYAMIDE FIBERS IN THE PRESENCE OF IMIDAZOLINE COMPOUNDS

Hans Wegmuller, Riehen, Alois Kleemann, Basel, and Rudolf Keller, Riehen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Sept. 15, 1969, Ser. No. 858,111
Claims priority, application Switzerland, Sept. 19, 1968, 14,063/68
Int. Cl. D06p *3/14*
U.S. Cl. 8—54 **18 Claims**

Process for the dyeing and printing of natural and synthetic polyamide fibres with a dye liquor which liquor contains an anionic reactive dye, a compound of the formula



wherein

R represents an aliphatic hydrocarbon radical having 11 to 23 carbon atoms in the main chain,

R_1 represents hydrogen, an unsubstituted or substituted lower alkyl group, or an unsubstituted or substituted phenyl group,

Y represents, together with the

group, the radical of a partially saturated diazole or diazine ring, and

X represents the anion of an inorganic or organic acid, and optionally a non-ionogenic and/or anion-active tenside, as well as further auxiliary agents;

premixed dye assistant composition suitable therefore and dye liquor containing the aforesaid compound.

3,669,609

N-METHYLOLACRYLAMIDE TEXTILE FINISH CONTAINING CITRIC ACID OR DICYANDIAMIDE

Robert George Weyker, North Plainfield, William Frederick Baitinger, Jr., Hillsborough Township, Somerset County, and John Gregory de Marco, Somerville, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Dec. 31, 1970, Ser. No. 103,346
Int. Cl. D06m *15/54*
U.S. Cl. 8—116.3 3 Claims

This invention relates to textile finishes employing N-methylolacrylamide. More particularly, it relates to (1) aqueous solutions of N-methylolacrylamide containing citric acid or dicyandiamide (2) the method of treating cellulose-containing textile materials with the solutions and (3) the textile materials thus treated.

3,669,610

FLAME-RESISTANT WOOL

Mendel Friedman, Lafayette, Calif., assignor to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Feb. 12, 1970, Ser. No. 11,015
Int. Cl. D06m *3/02, 13/00*
U.S. Cl. 8—128 2 Claims

The flame resistance of wool fibers and blends of wool fibers is enhanced through reaction with bis-(β-chloroethyl) vinyl phosphonate in the presence of a free radical generating catalyst. The wool fibers may be modified by a reducing agent prior to contact with the phosphonate.

3,669,611

PRODUCTION OF ORNAMENTAL MULTITONE EFFECT ON POLYAMIDE TEXTILE MATERIALS

Shiro Shimauchi, Saburo Yoshida, and Koji Muro, Osaka-fu, Japan, assignors to Teijin Limited, Osaka, Japan

No Drawing. Filed Oct. 3, 1966, Ser. No. 583,922
Claims priority, application Japan, Oct. 11, 1965, 40/62,278; May 16, 1966, 41/31,311; Aug. 22, 1966, 41/55,175
Int. Cl. D06p *1/40, 3/24, 5/00*
U.S. Cl. 8—14 8 Claims

A method for producing an ornamental multitone effect on a polyamide textile material which comprises padding the surface of said polyamide textile materially locally with a dye rate controlling agent, fixing said dye rate controlling agent on said polyamide fiber, washing the so-treated polyamide fiber so as to form areas having differing rates of dyeing and thereafter dip dyeing said material with anionic dyestuff.

3,669,612

USE OF CYCLIC AMIDINE POLYMERS AS CORROSION INHIBITORS

Robert R. Annand, St. Louis, and Derek Redmore, Ballwin, Mo., and Brian M. Rushton, Williamsville, N.Y., assignors to Petrolite Corporation, Wilmington, Del.

No Drawing. Original application Oct. 22, 1965, Ser. No. 502,636, now Patent No. 3,531,496, dated Sept. 29, 1970. Divided and this application May 15, 1970, Ser. No. 37,857
Int. Cl. C23f *11/00, 11/08*
U.S. Cl. 21—2.5 10 Claims

The use of cyclic amidine polymers as corrosion inhibitors. These polymers are formed (1) by reacting cyanohydrins with (2) cyclic amidine-forming polyamines to form polyaminonitriles; and by further reacting these polyaminonitriles intermolecularly or with a polyamine under cyclic amidine-forming conditions to form the polymers.

3,669,613

METHOD FOR INHIBITING SULFIDE CRACKING OF METALS WITH A HYDROGEN SULFIDE-ALDEHYDE REACTION PRODUCT

John A. Knox, Bill R. Keeney, and Reginald M. Lasater, Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

No Drawing. Continuation-in-part of application Ser. No. 615,323, Feb. 13, 1967. This application Apr. 27, 1970, Ser. No. 32,356
Int. Cl. C23f *11/16, 11/04*
U.S. Cl. 21—2.7 14 Claims

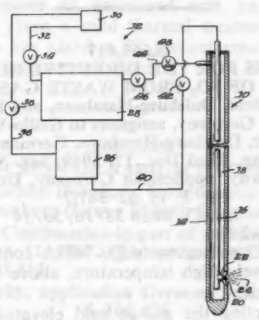
Inhibition of hydrogen sulfide cracking in ferrous metals is gained through the use of the reaction product of an aldehyde and hydrogen sulfide prepared in the presence of an acid wherein the reaction product may be formed in situ, added to a hydrogen sulfide containing environment or coated on a ferrous metal before it is exposed to such an environment.

3,669,614

METHOD FOR DISINTERRING A CASKET

Richard J. Husa, 11255 W. 74th St., La Grange, Ill. 60525, and James A. Stark, 300 Canterberry Lane, Oak Brook, Ill. 60521

Filed Sept. 25, 1970, Ser. No. 75,492
Int. Cl. A61l *9/00*
U.S. Cl. 21—2 1 Claim



Method for disinterring a casket while minimizing the presence of germs and/or undesirable odors. In carrying out the method, a hole is drilled through the vault and into the casket, and a probe is inserted into the casket through the hole. A liquid in the form of a finely divided mist, and a gas are simultaneously sprayed into the casket, and the casket is then removed from the vault.

The apparatus of the invention comprises a probe having a gas pipe and a liquid delivery pipe within the gas pipe. The gas pipe has an opening in the side adjacent to one end, and the liquid delivery pipe has a nozzle for spraying a mist of liquid through the opening. Means are also provided for delivering a liquid to the nozzle and a gas to the opening.

3,669,615

CORROSION INHIBITING METHOD

William Bruce Murray, 929 Terraine Ave., Long Beach, Calif. 90804

No Drawing. Continuation-in-part of application Ser. No. 829,842, May 5, 1969. This application Sept. 28, 1970, Ser. No. 76,221
Int. Cl. C23f *7/10*
U.S. Cl. 21—2.7 10 Claims

A liquid corrosion inhibitor and method designed for use by water treatment plants for the control of corrosion

of municipal, industrial, commercial and domestic metal piping systems, wherein, as the inhibitor is economically added to the flowing water supply in minute dosages, it passivates the surface of the metal piping as it deposits a self-controlled film of insoluble zinc phosphate. One of the preferred inhibitors includes zinc, sulfamate, and orthophosphate ions. To be effective, the pH must be controlled to within the range of 5–9.

3,669,616
CORROSION INHIBITING COMPOSITIONS AND METHOD

William Bruce Murray, Long Beach, Calif., and Mearl A. Kise, Portsmouth, and Thomas Edward Kelly, Chesapeake, Va., assignors to Virginia Chemicals Inc., Portsmouth, Va.

No Drawing. Continuation-in-part of application Ser. No. 76,221, Sept. 28, 1970. This application Sept. 28, 1971, Ser. No. 184,620
Int. Cl. C23f *11/00*
U.S. Cl. 21—2.7 **15 Claims**

Compositions and method for inhibiting corrosion of ferrous and non-ferrous water pipes by inclusion of a zinc compound and a phosphate compound in the water such that the weight ratio of zinc ion to phosphate ion is substantially 1 to 1. Zinc ion concentration is in the range of less than one to about five parts per million.

3,669,617
PROCESS FOR THE DIRECTIVE REMOVAL OF SO_3 FROM WASTE GAS

Norbert Lowicki, Duisburg-Hamborn, and Hans Teggers, Wesseling, Germany, assignors to Grillo-Werke Aktiengesellschaft, Duisburg-Hamborn, Germany

No Drawing. Filed Dec. 17, 1969, Ser. No. 886,000
Claims priority, application Germany, Dec. 13, 1969, P 19 62 587.7
Int. Cl. B01d *53/16, 53/34*
U.S. Cl. 23—2 S **21 Claims**

Process of treating waste gas which contains SO_3 and is at a relatively high temperature, above its dew point, which comprises:

(a) contacting the gas at said elevated temperature with an absorbent comprising (1) an amphoteric component and (2) a basic component, wherein the amphoteric component (1) is at least one member of the group oxides, hydrated oxides and hydroxides of aluminum, zinc, iron and manganese, and basic component (2) is at least one member of the group oxides and hydroxides of alkali metals and alkaline earth metals, for absorption of SO_3 from the gas and thereby lowering the dew point of the gas to a lower dew point;

(b) utilizing at least part of the gas as a heating medium in a heat exchange whereby the gas is cooled to a relatively low temperature but above said lower dew point.

3,669,618
METHOD OF PRODUCING DICALCIUM FERRITE SINTER

Fred Cappel, Neu Isenburg, Germany, assignor to Republic Steel Corporation, Cleveland, Ohio

Filed Mar. 3, 1969, Ser. No. 803,926
Int. Cl. C01g *49/00*
U.S. Cl. 23—51 R **13 Claims**

Method of producing dicalcium ferrite sinter

$$(2CaO \cdot Fe_2O_3)$$

of improved properties which comprises: preparing an admixture of raw materials containing iron oxide bearing materials, preferably steel mill waste products, such as flue dust, precipitator dust, blast furnace gas scrubber sludge, mill scale, dust from basic oxygen steel production and the like, and calcium oxide bearing materials, such as limestone and/or dolomite, plus a solid carbonaceous fuel, such as coke or coke breeze, as required and in proportions to produce a dicalcium ferrite sinter on igniting and sintering, and adding to said raw materials admixture sintered fines from a previous sintering operation to the extent of about 30–50% and preferably about 30–40% by weight of said raw materials admixture and for purposes of controlling the process, improving strength, storageability and sintering properties, and igniting the resultant admixture and sintering into a uniformity well burned sinter.

3,669,619
PRODUCTION OF DIAMMONIUM HYDROGEN HEXAFLUOROALUMINATE AND ALUMINUM FLUORIDE

Norman W. Meyers, Etobicoke, Ontario, Canada, assignor to Electric Reduction Company of Canada, Ltd., Islington, Ontario, Canada

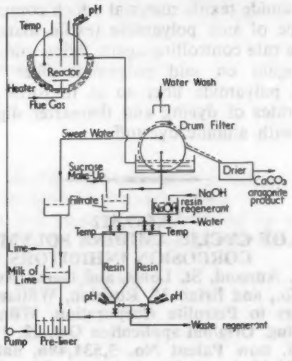
No Drawing. Filed Jan. 29, 1970, Ser. No. 6,967
Claims priority, application Great Britain, Jan. 30, 1969, 5,236/69
Int. Cl. C01f *7/02*
U.S. Cl. 23—52 **11 Claims**

Diammonium hydrogen hexafluoroaluminate is formed by reacting an aluminum-containing material with fluosilicic acid at a pH sufficient to inhibit precipitation of aluminum fluoride trihydrate. The F:Al atomic ratio of the resulting solution is increased to at least 5:1 and the solution is reacted with ammonia at a pH below about 5.

3,669,620
MANUFACTURE OF ARAGONITE

Michael Camm Bennett and Sidney David Gardiner, London, England, assignors to Tate & Lyle Limited, London, England

Filed Sept. 8, 1969, Ser. No. 855,902
Int. Cl. C01f *11/18*
U.S. Cl. 23—66 **7 Claims**



Calcium carbonate in needle crystal form is made by dissolving lime in aqueous sucrose solution and treating the solution with carbon dioxide, the sucrose being free from crystal poisons. If the sucrose is to be re-used it must be treated e.g. by anion exchange resin to remove crystal poisons.

3,669,621

PROCESS FOR PRODUCING A SUBSTANTIALLY PHOSPHATE ION-FREE AMMONIUM FLUORIDE SOLUTION

Manfred Schulze, Opladen, and Werner Schabacher, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 1, 1970, Ser. No. 51,703

Claims priority, application Germany, Aug. 23, 1969, P 19 42 925.5

Int. Cl. C01c *1/16, 11/24, 33/00*

U.S. Cl. 23—88 4 Claims

Hexafluorosilicic acid solutions are freed of phosphate ions by addition of ferric ion and introduction of ammonia gas to precipitate ferric phosphate. Substantially phosphate ion-free ammonium fluoride solutions are obtained from the hexafluorosilicic acid solutions.

3,669,622

PROCESS FOR THE PREPARATION OF CONDENSED PHOSPHATES

Dietmar Zobel, Wittenberg, Germany, assignor to VEB Stickstoffwerk Piesteritz, Wittenberg Lutherstadt, Germany

No Drawing. Filed Nov. 3, 1969, Ser. No. 873,649

Int. Cl. C01b *25/30, 25/38*

U.S. Cl. 23—107 8 Claims

Condensed phosphates are prepared by heating in the presence of air, at a temperature of 350°–500° C., a mash of orthophosphates containing up to 40% mole of phosphite, keeping the gram atom *Na:P* ratio between 3:2 and 2:1 and adding up to 1% mole of concentrated nitric acid or a nitrate salt. The product is of improved color. The process is preferably conducted by recycling the products.

3,669,623

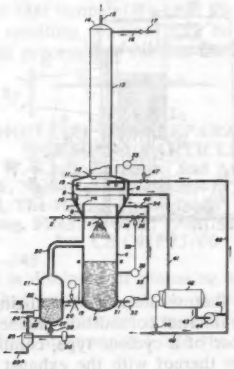
METHOD FOR THE REGENERATION OF HYDROCHLORIC ACID FROM SPENT PICKLE LIQUOR AND LIKE SOLUTIONS

Robert J. Allison, Coraopolis, Paul E. Hatfield, Beaver, and Robert Frumerman, Pittsburgh, Pa., assignors to Dravo Corporation, Pittsburgh, Pa.

Original application July 19, 1966, Ser. No. 566,310, now Patent No. 3,495,945, dated Feb. 17, 1970. Divided and this application Aug. 25, 1969, Ser. No. 870,697

Int. Cl. C01b *7/08*

U.S. Cl. 23—154 7 Claims



A method for regenerating hydrochloric acid from spent pickle liquors by charging the liquor into a converter where the liquor is contacted by hot combustion gases and water vapor, hydrogen chloride and a metallic oxide are produced. The liquor is dispersed in a closed environment and contacted therein with hot combustion gases and vapors from the converter at a temperature where the water vaporizes to concentrate and preheat the liquor which is then collected in the environment followed by transfer of concentrated preheated liquor to the converter while gases and vapors are withdrawn from the closed environment into an absorption column and contacted with a countercurrent stream of liquid absorbent.

3,669,624

PROCESS FOR PRODUCING HIGH AVERAGE PORE VOLUME SILICA

John L. Warthen, Baltimore, and Thomas H. Cheavens, Glenwood, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed July 9, 1970, Ser. No. 53,645

Int. Cl. C01b *33/00*

U.S. Cl. 23—182 R 10 Claims

The present process produces a high pore volume silica of about 2 to 2.65 cc./g. where substantially all of the pore diameter is narrowly distributed between about 100 A. to 500 A. pore diameter. By the present process, silica is slurried in a weak hydrofluoric acid solution followed by filtration. The wet silica is washed thoroughly with alcohol to remove all water and acid, and dried. The silica then is given a mild thermal treatment. The end product silica has about a 50 percent greater pore volume than an unprocessed silica.

3,669,625

PRODUCTION OF BARIUM HYDROXIDE

Hans-Joachim Rohrborn, Lothringerstrasse 16, Homberg (Lower Rhine), Germany

No Drawing. Continuation-in-part of application Ser. No. 674,671, Oct. 11, 1967. This application Dec. 31, 1970, Ser. No. 103,313

Claims priority, application Germany, Oct. 13, 1966, S 106,476

Int. Cl. C01f *11/10*

U.S. Cl. 23—186 4 Claims

Production of barium hydroxide by oxidation of barium sulfide containing solutions with molecular oxygen containing gases in the presence of an alkali metal hydroxide.

3,669,626

INTERACTION CORRECTION IN CONTINUOUS FLOW ANALYSIS

Ralph E. Thiers, Woodland Hills, and Julius Meyn, Jr., Santa Monica, Calif., assignors to Bio-Science Laboratories, Van Nuys, Calif.

No Drawing. Filed Nov. 4, 1970, Ser. No. 86,971

Int. Cl. G01n *1/18, 13/00*

U.S. Cl. 23—230 A 8 Claims

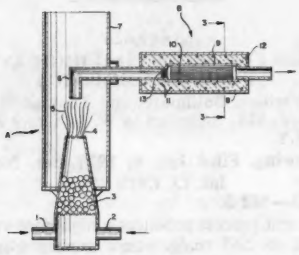
A method for correcting for interaction between successive fluid samples in continuous flow analysis comprises analyzing a series of fluid standards, two of which are identical. The standards are analyzed in any order in which one of the identical standards is preceded by a standard of higher concentrational value and the other is preceded by a standard of lower concentrational value. Analysis of the analytical results by a reiterative estimation procedure provides an accurate estimate of interaction and a calibration curve corrected for interaction. These can be used to provide analytical sample data corrected for interaction.

3,669,627

METHOD AND APPARATUS FOR DETERMINING THE COMPOSITION OF A HYDROCARBON-CONTAINING FUEL MIXTURE

Walter D. Mills, Mold, Wales, assignor to Shell Oil Company, New York, N.Y.

Filed Mar. 5, 1970, Ser. No. 16,786
Claims priority, application Great Britain, Mar. 10, 1969, 12,382/69
Int. Cl. G01n *31/12*
U.S. Cl. 23—230 PC 9 Claims



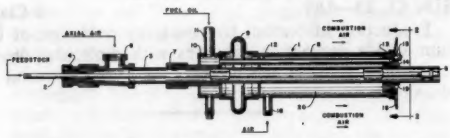
Apparatus and method for determining the composition of a hydrocarbon-containing fuel mixture by oxidizing a sample of the mixture to completion and determining the dielectric constant of the fully oxidized material.

3,669,628

BURNER AND FEEDSTOCK INJECTION ASSEMBLY FOR CARBON BLACK REACTOR

Burton F. Latham, Jr., Houston, and William B. Crull, Dumas, Tex., assignors to Continental Carbon Company, Houston, Tex.

Filed July 31, 1970, Ser. No. 59,961
Int. Cl. C01b *31/00*
U.S. Cl. 23—259.5 10 Claims



A burner and feedstock injection assembly for a carbon black reactor having three concentric pipes:

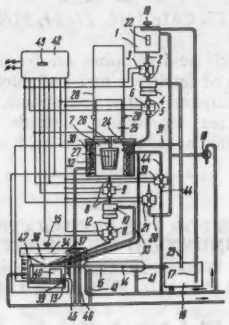
a center pipe for feedstock;
a second pipe, surrounding the center pipe;
a third pipe, surrounding the second pipe;
and a plurality (preferably three) of fuel-oil pipes disposed within the annulus between the second and third pipes;
the ends of each of these fuel-oil pipes being equipped with a spray nozzle inclined at an angle with respect to the axis of the center pipe. These fuel-oil pipes are for the introduction of combustion fuel into the reactor. preferably, the assembly also includes a substantially cone-shaped flameholder device mounted concentrically about the third pipe at the end thereof, such cone flaring outwardly toward the interior of the reactor, such cone being comprised of a plurality of vanes or louvers each of which is twisted at the outer ends thereof.

3,669,629

APPARATUS FOR DETERMINING FAT CONCENTRATION IN MATERIALS

Nikolai Parfentievich Paramonov, Ulitsa Marupes 2, kv. 3, Jurmala, U.S.S.R.

Filed Apr. 27, 1970, Ser. No. 32,035
Int. Cl. G01n *33/26*
U.S. Cl. 23—259 3 Claims



The present invention relates to apparatuses for determining fat concentration in materials.

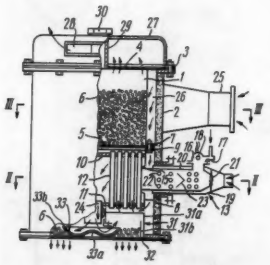
The apparatus comprises an extractor which is fitted with a vibrator to impart vibrations to solvent and material under test contained therein and is connected to solvent-measuring and solution-measuring hoppers at its inlet and outlet, respectively, through controlled valves; and an evaporator with a built-in condenser to separate fat from solvent and condense solvent vapour.

3,669,630

APPARATUS FOR THERMOCATALYTIC NEUTRALIZING OF EXHAUST GASES OF AN INTERNAL COMBUSTION ENGINE

Sergei Sergeevich Filatov, Ulitsa Belorechenskaya 36, kv. 4, and Mikhail Maximovich Konorev, Teatralny pereulok 5, kv. 2, both of Sverdlovsk, U.S.S.R.

Filed Feb. 12, 1970, Ser. No. 10,724
Int. Cl. B01j *9/04*
U.S. Cl. 23—288 F 3 Claims



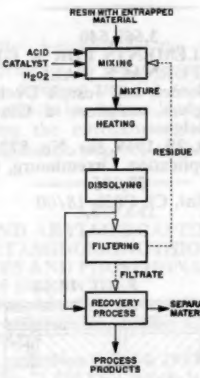
Apparatus for thermocatalytic neutralizing of the exhaust gases of an internal combustion engine comprises a separation chamber of a cyclone type, communicating at the upper portion thereof with the exhaust manifold of the associated internal combustion engine and also communicating at the lower portion thereof with the lower portion of a chamber receiving thereinside a supply of a catalyst, the last-mentioned chamber also communicating with ambient atmosphere. The communication between

the separation chamber and the catalyst chamber includes a heat exchanger associated with a burner device for heating the exhaust gases by means of indirect heat exchange through tubular conveyers of the heat exchanger. The combustion products of the burner device are neutralized in an auxiliary catalyst chamber. There is no fluid communication between the burner device and the exhaust manifold of the engine, which makes it possible to reduce counter pressure in the exhaust manifold of the engine and improve the stability of the burner device operation.

3,669,631
REMOVAL OF MATERIALS FROM ION EXCHANGE RESINS

Lee A. Dietrich, Bellbrook, John C. Dikeman, West Carrollton, and Kenneth R. Johnson, West Milton, Ohio; said Dietrich and Dikeman assignors to the United States Atomic Energy Commission

Filed Jan. 8, 1970, Ser. No. 1,483
(Filed under Rule 47(a) and 35 U.S.C. 116)
Int. Cl. B01f *1/00;* **B01j** *9/04*
U.S. Cl. 23—342 **4 Claims**



A process for removal of materials from spent ion exchange resin wherein the spent resin is mixed with an acidic solution including a catalyst and hydrogen peroxide, and the mixture is heated to a temperature at which the exothermic reaction of the mixture is initiated and maintained at that temperature until the reaction is completed. The resulting solution may be filtered and the filtrate further processed to recover the desired materials.

3,669,632
METHOD FOR THE PREPARATION OF SPHERICAL PARTICLES

Johannes B. W. Kanij, Zevenaar, and Arend J. Noothout, Oosterbeek, Netherlands, assignors to Reactor Centrum Nederland, The Hague, Netherlands

No Drawing. Filed Sept. 27, 1968, Ser. No. 763,390
Int. Cl. C01f *15/00*
U.S. Cl. 23—345 **10 Claims**

A method is disclosed of preparing spherical particles of actinide hydroxide gel, which particles can be converted by thermal treatment into spherical oxide, and if carbon has been incorporated into the gel, carbide particles.

Spherical actinide oxide and carbide particles are needed in nuclear technics.

An actinide hydroxide sol is mixed with a solution of one or more ammonium donors and subsequently gelled by dispersion into a hot liquid nonmiscible with water.

3,669,633
CONTINUOUS PROCESS FOR THE PREPARATION OF PHOSPHONITRILIC CHLORIDE CYCLIC POLYMERS

Sidney Beinfest, Berkeley Heights, Zenon Jacura, North Plainfield, and Phillip Adams, Murray Hill, N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

Filed Aug. 19, 1970, Ser. No. 65,074
Int. Cl. C01b *21/00, 25/00*
U.S. Cl. 23—357 **7 Claims**

In the production of phosphonitrilic chloride cyclic polymers by the reaction of ammonium chloride with PCl_5, substantial improvements are obtained by injection of PCl_3 and Cl_2 into the reaction zone to form the PCl_5; treating phosphonitrilic chloride polymers contained in an inert organic solvent with water to segregate a major portion of the linear polymers to an aqueous phase and a major portion of the cyclic polymers to an organic solvent phase; and incorporating these improvements further into a continuous method.

3,669,634
METAL COMPOSITES

John E. Peters, Chagrin Falls, Ohio, and Fred J. Rollfinke, Bronxville, N.Y., assignors to Chase Brass and Copper Company Incorporated, Cleveland, Ohio

Filed June 18, 1968, Ser. No. 737,984
Int. Cl. B22f *3/16*
U.S. Cl. 29—182.1 **7 Claims**

Powder metal composites and mill products formed thereof are disclosed in which two metal components are admixed in powder form and compacted under conditions which maintain the component metals in substantially unalloyed condition. Rhenium and rhenium-refractory metal mixtures comprise a first component, while metals such as gold, silver and copper having high electrical and thermal conductivity comprise the other component.

3,669,635
TANTALUM ANODES AND METHOD OF PRODUCING

Wiley M. Baldwin, Winston-Salem, and Raymond Monroe, Jr., Clemmons, N.C., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed June 11, 1969, Ser. No. 837,992
Int. Cl. B22f *3/00*
U.S. Cl. 29—182 **6 Claims**

A tantalum anode having a high CV per unit weight is produced by blending tantalum powder and a mixture of tantalum oxide and carbon. The mixture is heated in a vacuum to produce tantalum anodes.

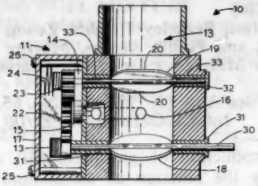
3,669,636
CARBURETOR FUEL-AIR PROPORTIONING MECHANISM

Keith H. Garretson, P.O. Box 111, Mount Pleasant, Iowa 52641, and Owen L. Garretson, P.O. Box 108, Farmington, N. Mex. 87401

Filed Oct. 20, 1969, Ser. No. 867,457
Int. Cl. B01f *3/02;* **F02m** *7/18, 7/22*
U.S. Cl. 48—180 P **13 Claims**

A gaseous fuel-air proportioning mechanism for carburetors comprising a pair of valves spaced downstream and upstream of a fuel delivering point in the bore of a carburetor with one being the throttle valve and located in proximity to the manifold of the engine and the other being an air metering valve of lesser diameter than the carburetor bore and located upstream of the throttle valve and upstream of the fuel inlet, so that there is a relatively constant pressure drop across the air metering valve and the fuel metering point. The mechanism includes a fuel metering system having a fuel valve with a cam shaped edge operated sequentially with the air metering valve to regulate the quantity of

fuel inducted into the carburetor bore with the fuel metering system being co-ordinated with the throttle



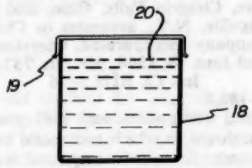
valve and air metering valve so that they are operated sequentially.

3,669,637

ODORANT REPLACEMENT IN GAS STREAMS

Donald L. Klass, Barrington, and Carl D. Landahl, Chicago, Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed May 8, 1970, Ser. No. 35,906
Int. Cl. C01j *1/28*
U.S. Cl. 48—195 **16 Claims**



Odor fading of odorants in gas streams is counteracted by adding odorants from an enclosed container through a permeable membrane over selected time periods. The container is preferably self-destructing after the odorant is exhausted.

3,669,638

METHOD OF PRODUCING BONDED RANDOMLY ORIENTED GLASS FIBER MATS AND BATTS

Robert Wong, Granville, and Homer G. Hill, Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation

Filed Dec. 11, 1968, Ser. No. 783,072
The portion of the term of the patent subsequent to Oct. 13, 1987, has been disclaimed
Filed Dec. 11, 1968, Ser. No. 783,072
Int. Cl. C03c *25/02*
U.S. Cl. 65—3 **11 Claims**

The method of producing bonded randomly oriented glass fiber mats and batts wherein the binder is applied to the glass fibers of the mats or batts in a gel thickened state. The gel thickened binder can be sprayed into an air stream which carries the glass fibers to a foraminous collection surface. The globules of gel are caught and retained by the fibers gathered on the collection surface so that little binder leaves with the exiting air stream. The improved method reduces air pollution, improves binder transfer efficiencies, and the strength of the finished bonded mat.

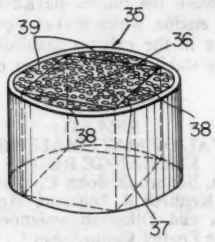
3,669,639

METHOD FOR PRODUCTION OF FUSED ENERGY-CONDUCTING STRUCTURE

Touru Inoue, Nishinomiya-shi, Tetsuya Yamada, Takarazuka-shi, and Seizo Noguchi, Amagasaki-shi, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Oct. 17, 1969, Ser. No. 867,260
Claims priority, application Japan, Oct. 23, 1968, 43/77,179
Int. Cl. C03c *23/20, 19/00*
U.S. Cl. 65—4 **9 Claims**

A method for the production of a fused energy-conducting structure, which comprises cementing a plurality of energy-conducting filaments or multifilaments with a heat-sublimable or heat-volatile binder material in a parallel arrangement, heating the resulting bundle of energy-conducting filaments or multifilaments cemented



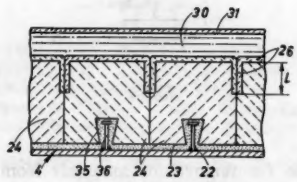
with said binder material thereby to cause sublimation or vaporization of said binder material, and heat-fusing said energy-conducting filaments or multifilaments with one another.

3,669,640

REFRACTORY ELEMENTS FOR A GLASS FLOAT FURNACE WALL

Edgard Brichard, Jumet, and Joseph Declaye, Moustier-sur-Sambre, Belgium, assignors to Glaverbel, Watermael-Boitsfort, Belgium

Filed Oct. 29, 1969, Ser. No. 872,099
Claims priority, application Luxembourg, Oct. 30, 1968, 57,196
Int. Cl. C03b *18/00*
U.S. Cl. 65—182 R **19 Claims**



A furnace tank for use in the production or treatment of glass floating on a bath of molten material has at least one wall formed of a refractory element. The element comprises a refractory body having a refractory coating different in composition from the body adhering to at least a portion of that face which is directed toward the interior of the tank. The refractory coating is preferably applied to a face of the body in the flowable state and sets in situ.

3,669,641

PRODUCTION OF COMPLEX NITROPHOSPHATE FERTILISERS

Robert Copin, Sailly-la-Bourse, and Robert Sinn and Charles Bouilly, Bully-les-Mines, France, assignors to Societe Chimiques des Charbonnages, Paris, France

Filed Jan. 28, 1969, Ser. No. 794,700
Claims priority, application France, Feb. 1, 1968, 138,335
Int. Cl. C05b *11/06*
U.S. Cl. 71—35 **3 Claims**

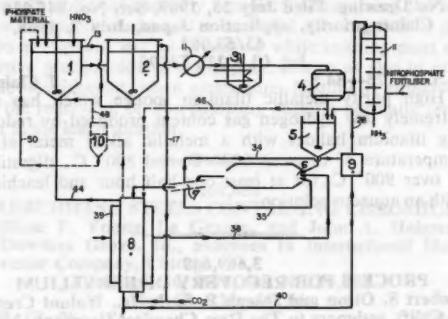
Process for the production of nitrophosphate fertilisers which comprises:

(i) Digesting calcium phosphate with aqueous nitric acid in the presence of recycled nitrogen oxide-containing gas,

(ii) Cooling the solution obtained by digestion to crystallise calcium nitrate tetrahydrate,

(iii) Separating the crystallised calcium nitrate tetrahydrate,

(iv) Processing the mother liquor to form a nitrophosphate fertiliser therefrom,



(v) Thermally decomposing the separated calcium nitrate in the presence of calcium carbonate and of the off-gas from the digestion step (i), said off-gas containing carbon dioxide which has been added thereto, and

(vi) Recycling the nitrogen oxide-containing off-gas from the decomposition step (v) to the digestion step (i).

3,669,642

ARYLOXY AND ARYLMERCAPTO - N-METHOXYETHYLACETAMIDOMONOTHIO AND DITHIOPHOSPHATES AND PHOSPHONATES AND THEIR UTILITY AS HERBICIDES

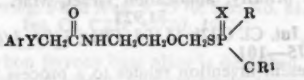
Llewellyn W. Fancher, Orinda, and Reed A. Gray, Saratoga, Calif., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Application Oct. 20, 1967, Ser. No. 676,698, now Patent No. 3,520,956, which is a continuation-in-part of application Ser. No. 463,322, June 11, 1965. Divided and this application Mar. 19, 1970, Ser. No. 24,977

Int. Cl. A01n 9/36

U.S. Cl. 71—87 **6 Claims**

Compounds corresponding to the formula



in which X and Y are, independently, oxygen or sulfur, Ar is phenyl, nuclear chlorinated-phenyl, or naphthyl groups, the chlorination is from 1 to 5 chlorine atoms, inclusive, R is lower alkyl or lower alkoxy and R^1 is lower alkyl. The naphthyl nuclei are bonded through either the α or β nuclear carbon atom. The above compounds are effective herbicides, particularly for the control of grasses and broadleaf plants with both pre-emergence and post-emergence activity.

3,669,643

METHOD FOR THE PREPARATION OF SMALL COBALT PARTICLES

Brian G. Bagley, Watchung, and James Nicholas Carides, Bernardsville, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 5, 1970, Ser. No. 34,680

Int. Cl. H01f 1/20

U.S. Cl. 75—.5 AA **9 Claims**

Fine particles of magnetic materials are the basic operational constituents of devices such as permanent magnets and magnetic recording tapes. The use of fine cobalt particles for such devices has been limited by the difficulty of producing such particles with the magnetically more desirable hexagonal crystal structure. The disclosure here contemplates the production of fine particles containing hexagonal metallic cobalt by a simple and potentially economic process involving precipitation from solution by a strong reducing agent. This process can be successfully performed if the solution contains minor quantities of ions of Cr, Pt, As, Ca, Ge and/or Ta in addition to cobalt ions.

3,669,644

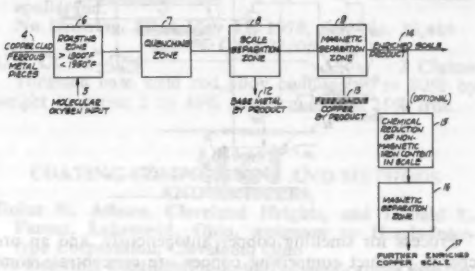
RECLAMATION OF COPPER FROM COPPER-CLAD STEEL

Jack Sato, Dyer, Ind., assignor to SCM Corporation, Cleveland, Ohio

Filed Feb. 3, 1971, Ser. No. 112,208

Int. Cl. C22b 7/00

U.S. Cl. 75—.5 B **13 Claims**



Cuprous powder of desirable quality is produced by roasting pieces of copper-clad ferrous metal such as steel in air between about 1500° F. and about 1950° F. until copper-rich scale is formed containing minor iron content; separating the scale from base metal; magnetically cleaning the separated scale to remove iron content therefrom.

3,669,645

METHOD FOR OPERATING AN OXYGEN TOP-BLOWING CONVERTER

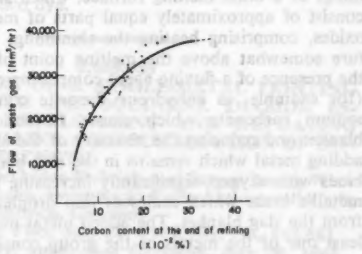
Masashi Oishi, Michihiko Shimada, Yuji Nakayama, Koichiro Naito, and Kazuhiko Okamoto, Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of application Ser. No. 640,093, May 22, 1967. This application June 1, 1970, Ser. No. 42,508

Claims priority, application Japan, May 23, 1966, 41/32,830

Int. Cl. C21c 5/32

U.S. Cl. 75—60 **2 Claims**



A method for operating an oxygen top-blowing converter characterized by precisely judging the final carbon content of the steel bath contained in the converter for the manufacture of low-carbon steel by detecting the flow of waste gas generated from the converter at the

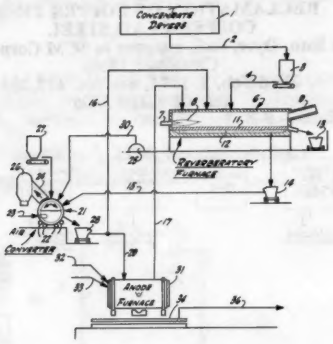
final stage of oxygen blowing while keeping conditions of operating the converter at constant ones for the same stage of blowing.

3,669,646

PROCESS FOR AUTOGENOUS SMELTING OF COPPER ORE CONCENTRATES AND CHARGE PRODUCT THEREFOR

John T. Cullom, 628 6th Ave., San Manuel, Ariz. 85631

Filed Nov. 21, 1969, Ser. No. 878,785
Int. Cl. C22b *5/08, 15/00, 15/06*
U.S. Cl. 75—74 21 Claims



Process for smelting copper autogenously, and an ore charge product comprising copper ore concentrate compacted with carbonaceous fuel into nodules suitable for charging directly into a converter furnace for autogenous smelting therein. Finely divided siliceous flux may also be compacted and intimately mixed with the ore concentrate and fuel. Fuel and flux are added to a given or concentrate in accordance with the composition of the concentrate in amounts sufficient to augment the heat value of the sulfur and iron of the ore to insure autogenous smelting and to produce the desired silica-iron ratio in the converter slag.

3,669,647

METHOD OF RECOVERING METALLIC BRASS FROM THE SKIMMING OF A BRASS MELTING FURNACE

Alfred R. Barbour, Pittsburgh, Pa., assignor to Roessing Bronze Company, Mars, Pa.

No Drawing. Continuation of application Ser. No. 661,785, Aug. 21, 1967. This application Dec. 22, 1969, Ser. No. 887,358
Int. Cl. C22b *15/14, 19/30*
U.S. Cl. 75—76 4 Claims

A method of recovering metallic brass from the skimmings of a brass melting furnace, which skimmings may consist of approximately equal parts of metal and metal oxides, comprising heating the skimmings to a temperature somewhat above the melting point of the metal in the presence of a fluxing agent comprising oxide of boron (for example, in anhydrous Rasorite concentrate) and sodium carbonate which causes formation of a slag blanket and reducing the viscosity of the slag blanket by adding metal which remains in the slag blanket and combines with oxygen, significantly increasing the amount of metallic brass which coalesces into droplets which settle from the slag blanket. The added metal may comprise at least one of the metals of the group consisting of calcium, aluminum, silicon, manganese and titanium. In the heating step the components may be present in approximately the following proportions: 25,000 pounds of skimmings, 715 to 1430 pounds of oxide of boron (for example, in 1100 to 2200 pounds of anhydrous Rasorite concentrate), 100 pounds of sodium carbonate and 50 pounds of metal which remains in the slag blanket and combines with oxygen.

3,669,648

PROCESS FOR THE PREPARATION OF HIGH PURITY METALLIC TITANIUM

Shumzo Homma and Minoru Harada, Takaoka-shi, Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan

No Drawing. Filed July 25, 1969, Ser. No. 845,026
Claims priority, application Japan, July 7, 1968, 43/53,082
Int. Cl. C22b *53/00*
U.S. Cl. 75—84.5 7 Claims

High purity metallic titanium sponge which has an extremely low hydrogen gas content produced by reducing titanium halides with a metallic alkali metal at a temperature of between 600° C. and 800° C., digesting at over 900° C. for at least one half hour and leaching with an aqueous solution.

3,669,649

PROCESS FOR RECOVERY OF BERYLLIUM

Robert S. Olson and Joseph P. Surls, Jr., Walnut Creek, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 514,179, Dec. 16, 1965. This application Jan. 30, 1970, Ser. No. 7,130
Int. Cl. C22b *59/00*
U.S. Cl. 75—101 7 Claims

Beryllium values are separated from other metal values such as ferric iron, aluminum, thorium and rare earth values, by a process comprising heating an aqueous slurry wherein the beryllium values are present initially as solids at a temperature of at least 145° C., for at least 20 minutes. Final hydrogen ion concentration at the end of the heating period is controlled within the range of from about 2 to about 0.0001 normal. After the heating step, solubilized beryllium values are separated from solid residual metal values and other impurities by filtration or other conventional liquid-solid separatory techniques.

3,669,650

PRODUCTION OF COPPER COMPOUNDS AND COPPER METAL POWDER

Benjamin Elstein, 2 Fichman St., and Roman Fein, 8 Frenkel St., both of Ramat Aviv, Israel

No Drawing. Filed Mar. 26, 1970, Ser. No. 23,004
Claims priority, application Israel, Mar. 27, 1969, 31,921
Int. Cl. C22b *15/08;* C01g *3/04, 3/06*
U.S. Cl. 75—101 4 Claims

The present invention relates to a process for the production of copper compounds from copper cement, which comprises first at least partially oxidizing the copper cement and afterwards reacting the oxidized copper cement with hydrochloric acid. If desired, the thus obtained cuprous chloride is further reacted so as to convert it into other copper compounds. The reaction may be conducted in such manner that part of the copper cement is converted into high grade copper metal powder.

3,669,651

REDUCTION OF FERRIC IONS IN CYCLIC PROCESS OF LEACHING AND PRECIPITATION OF COPPER

Henry R. Spedden, John A. Apps, and Donald F. Lowe, Salt Lake City, Utah, assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Apr. 15, 1970, Ser. No. 28,874
Int. Cl. C22b
U.S. Cl. 75—104 3 Claims

Ferric sulfate-sulfuric acid leaching of naturally occurring, copper-bearing materials, such as copper minerals

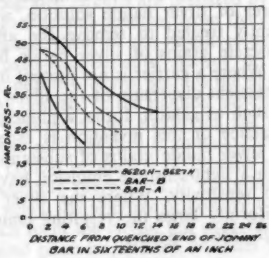
in mine waste dumps, and recovery of the dissolved copper by precipitation on metallic iron are carried out on a cyclic basis, with reduction of ferric ions prior to the copper precipitation step. The pregnant leach solution is treated with a controlled quantity of a water soluble reductant, such as sulfur dioxide or ammonium-bisulfite, for a sufficient period of time in the presence of activated carbon as a catalyst to minimize the ferric ion content thereof while substantially completely consuming the active ions of the reductant so wasteful consumption of the iron precipitant will be prevented while insuring most effective precipitation of the copper, and so as also to provide nourishment, when ammonium bisulfite is employed as the reductant, of iron-oxidizing bacteria normally present in the leach solution.

3,669,652

CARBURIZING STEELS CONTAINING CHROMIUM

William P. Young, La Grange, and John A. Halgren, Downers Grove, Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Apr. 20, 1970, Ser. No. 29,884
Int. Cl. C22c *39/14*
U.S. Cl. 75—126 C **1 Claim**



A family of steels having both high hardenability and high impact strength properties that include 0.18%–0.28% carbon, 1.01%–1.17% manganese, 0.15%–0.17% molybdenum, 0.48%–0.60% chromium, and trace amounts of nickel.

3,669,653

FERROUS BASE ALLOY

Arthur T. Cape, Monterey, Calif., assignor to Coast Metals, Inc., Little Ferry, N.J.

No Drawing. Filed Aug. 5, 1970, Ser. No. 61,448
Int. Cl. C22c *39/20, 39/50*
U.S. Cl. 75—128 D **5 Claims**

A high-carbon ferrous base alloy is described, containing chromium and nickel, and relatively large amounts of vanadium, the alloy, due to its vanadium content, having a high impact resistance, and excellent wear or erosion resistance. The alloy is particularly useful for making castings, such as sand slinger buckets, and the like.

3,669,654

FOAMED METAL

Currie B. Berry, Jr., Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Oct. 30, 1970, Ser. No. 85,814
Int. Cl. B31d *3/00*
U.S. Cl. 75—20 F **13 Claims**

Foamed metals having improved cellular structure and strength are produced by melting the metal, thickening the molten metal with a gaseous viscosity increasing agent, thinning the thickened metal to a desired viscosity by holding for a period of time, and foaming the metal. In the thinning step the metal may be held until it solidifies, which furnishes a convenient interval for shipping the prethickened metal to a new location for the foaming step.

3,669,655

OHMIC CONTACTS FOR GALLIUM ARSENIDE SEMICONDUCTORS

Ronald H. Cox, Dallas, and Hans A. Strack, Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Original application Dec. 2, 1966, Ser. No. 598,701, now Patent No. 3,544,854, dated Dec. 1, 1970. Divided and this application Dec. 3, 1969, Ser. No. 881,927
Int. Cl. C22c *5/00*
U.S. Cl. 75—173 R **2 Claims**

Silver-base alloys containing indium and germanium are used as ohmic contacts for gallium arsenide semiconductor devices.

3,669,656

TUNGSTEN BASE WELDING ROD, METHOD FOR MAKING SAME AND NOVEL APPLICATIONS OF SAME

Peter C. Murphy and J. Richard Lawrence, Indianapolis, Ind., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

No Drawing. Filed May 11, 1970, Ser. No. 36,489
Int. Cl. C22c *27/00*
U.S. Cl. 75—176 **2 Claims**

Tungsten base weld rod alloy contains 40 to 80% by weight tungsten; 5 to 40% nickel and 1 to 25% iron.

3,669,657

COATING COMPOSITIONS AND METHODS AND ARTICLES

Dolor N. Adams, Cleveland Heights, and Donald L. Fauser, Lakewood, Ohio, assignors to Harris-Intertype Corporation, Cleveland, Ohio

No Drawing. Continuation-in-part of applications Ser. No. 640,352, 640,353, 640,354, 640,355, all Feb. 15, 1957. This application Mar. 29, 1969, Ser. No. 18,230
The portion of the term of the patent subsequent to Oct. 7, 1986, has been disclaimed
Int. Cl. G03g *5/08*
U.S. Cl. 96—1.8 **26 Claims**

Coating materials are disclosed for imparting desired surface characteristics to a variety of articles. The coating materials are applied from a water solution of the resinous binding agent containing discrete solid particles of water insoluble inorganic material.

3,669,658

PHOTOSENSITIVE PRINTING PLATE

Teruhiko Yonezawa and Kesanao Kobayashi, Odawarashi, and Teruo Kobayashi, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed June 11, 1969, Ser. No. 832,493
Int. Cl. G03f *7/02;* **G03o** *1/52*
U.S. Cl. 96—33 **3 Claims**

A light-sensitive layer on a photosensitive printing plate which yields a visible image upon exposure to light comprising an o-quinone diazide or an o-naphthoquinone diazide, and a leuco dye.

3,669,659

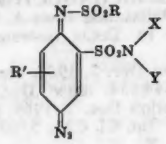
PREPARATION OF A SINGLE-METAL PRINTING PLATE WITH IMINOQUINONE DIAZIDE INVOLVING DEVELOPMENT AND DECOATING WITH ALKALINE AQUEOUS SOLUTION OF DIFFERENT STRENGTH

Fritz Uhlig, Wiesbaden-Biebrich, and Jurgen Braun, Wiesbaden, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

No Drawing. Filed July 28, 1969, Ser. No. 845,581
Claims priority, application Germany, July 30, 1968, P 17 72 978.1
Int. Cl. G03f *7/02*
U.S. Cl. 96—33 **8 Claims**

This invention relates to a process for the preparation of a single metal printing plate from a reproduction material comprising a metallic support and a light-sensitive

layer thereon which contains an iminoquinone diazide of the following formula



wherein

R is aryl or substituted aryl,
X is hydrogen or alkyl, or forms a polymethylene imine group with Y and the N atom to which X and Y are attached,
Y is alkyl, aryl, substituted aryl, or part of the aforementioned polymethylene imine group, and
R' is hydrogen, halogen, alkyl or alkoxy,

and a resin which is soluble in an aqueous alkali solution, in which process the reproduction material is image-wise exposed under an original and developed by means of a weakly alkaline, aqueous solution, thereby baring those areas of the support which correspond to the non-transparent areas of the original. After exposure and development, the reproduction material is coated with an alkali-resistant lacquer and then decoated with a solution which is more strongly alkaline than the solution used for development, thereby baring the areas of the support which were under the transparent areas of the original during exposure, while the areas corresponding to the non-transparent areas of the original remain lacquered.

3,669,660

LITHOGRAPHIC PLATE DEVELOPING COMPOSITION AND PROCESS OF USE THEREOF

Eugene Golda, Monsey, and Alfred Taudien, New York, N.Y., assignors to Polychrome Corporation, Yonkers, N.Y.

No Drawing. Filed May 21, 1970, Ser. No. 39,572
Int. Cl. G03f 7/02
U.S. Cl. 96—33 6 Claims

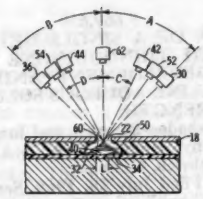
Developing compositions for negative-acting lithographic plates sensitized with substantially water-insoluble diazonium compounds comprising aqueous solutions of water-soluble sulfonic acids or water-soluble salts of sulfonic acids.

3,669,661

METHOD OF PRODUCING THIN FILM TRANSISTORS

Derrick J. Page, Pittsburgh, and Michael C. Driver, Trafford, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 6, 1970, Ser. No. 17,197
Int. Cl. G03c 5/00
U.S. Cl. 96—36.2 8 Claims



This disclosure is concerned with a method of producing a thin film transistor on a substrate by evaporating layers of various materials from sources positioned at various angles to the substrate normal.

3,669,662

CYCLIC POLYISOPRENE PHOTORESIST COMPOSITIONS

Ram K. Agnihotri, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 15, 1970, Ser. No. 80,853
Int. Cl. G03c 1/52
U.S. Cl. 96—75 8 Claims

A light-sensitive photoresist composition comprised of a cyclized polyisoprene polymer and a bis-diazide photoinitiator; and light-sensitive elements coated with such compositions.

3,669,663

PREPARATION OF SILVER HALIDE GRAINS AND PHOTOGRAPHIC EMULSIONS

Charles E. Wheelock, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed Dec. 17, 1970, Ser. No. 99,274
Int. Cl. G03c 1/02
U.S. Cl. 96—94 12 Claims

Silver halide grains of controlled size are obtained by preparing a soluble silver halide-ammonia complex in water, with or without a carrier, and then depositing solution drops of controlled size into a chilled non-aqueous immiscible fluid. This results in the formation of discrete spheres of silver halide solution, which spheres are subsequently treated to remove the ammonia, and precipitate discrete grains of silver halide having a preselected size. Where a carrier is not present in the original solution, subsequent dispersion of the silver halide grains in a carrier, such as gelatin, forms a photographic emulsion. The practice of this invention is especially useful in producing silver halide grains of substantially uniform size for use in a light-sensitive emulsion having excellent contrast, and sensitivity. Where the silver halide particles are uniformly large the resulting emulsion is also capable of high-speed exposure.

3,669,664

PROCESS OF STRENGTHENING PRESENSITIZED LITHOGRAPHIC PLATE WITH LACQUER EMULSION

Ronald Alfred Charles Adams, St. Mary Cray, Kent, England, assignor to Algraphy Limited, St. Pauls Cray, Kent, England

No Drawing. Filed June 20, 1969, Ser. No. 835,212
Claims priority, application Great Britain, June 21, 1968, 29,820/68
Int. Cl. G03f 7/02
U.S. Cl. 96—33 2 Claims

The image on a planographic printing plate is reinforced by treating the plate with a liquid composition comprising a dispersion in a vehicle liquid of a solution of a photopolymerisable resin having unsaturated double bonds in a solvent therefor. The solution of resin may be obtained by treating an exposed plate having a photopolymerisable resin layer with a solvent to dissolve unexposed photopolymerisable resin on said plate.

3,669,665

PROCESS FOR MAKING RESIST STENCILS FROM PHOTOGRAPHIC STRIPPING FILMS AND FOR USING SAME

Mark A. Faigenbaum, Poughkeepsie, Daniel J. Lasky, Wappingers Falls, and Harold C. Weisel, Pawling, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 18, 1971, Ser. No. 116,317
Int. Cl. G03c 5/00
U.S. Cl. 96—36 10 Claims

The separable layers of a photographic stripping film, consisting of a composite of a layer of sensitive unexposed emulsion (e.g. silver halide) carried upon a permanent support layer (e.g. cellulose nitrate) and stripped from

the temporary support layer and smoothly adhered to an object surface with the permanent support layer adjacent the surface. The emulsion layer successively receives image-wise exposure to light in a fast exposure process, photographic development and relief development; the last by an etch-bleach process. The underlying support layer is dissolved image-wise with high-fidelity through the relief stencil in the emulsion layer. Exposed areas of the object surface then receive aqueous based process handling (e.g. etching or plating) through the aqueous resistant composite master stencil formed by the emulsion and support layers.

3,669,666

METHOD FOR INTEGRATED CIRCUIT MASK FABRICATION AND ASSEMBLY USED THEREWITH

David Kleitman, Los Altos Hills, Lewis K. Russell, Livermore, and Alan B. Grebene, Sunnyvale, Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Filed Dec. 8, 1969, Ser. No. 882,905
Int. Cl. G03c *5/04*
U.S. Cl. 96—41 **10 Claims**

A method for integrated circuit mask fabrication. After the integrated circuit has been designed, the masks for making the integrated circuits are prepared by preparing a number of negatives and positives from the circuit which has been designed. Each of the negatives or positives is modified by paste-ins, cut-outs, ink-ins or erasures to provide on the negative or the positive the pattern for the particular mask desired. In the method, no critical dimension need be adhered to for modifying the negatives or positives because each negative is automatically related to the other. All critical perimeters or location edges for the circuit are accurately reproduced in accordance with the original from which the negative or positive was prepared. The lines which form the circuit are wide enough so that non-critical hand paste-ins, ink-ins, erasures and the like can be utilized. Each modified negative is converted to a positive. These positives and any converted positives can then be photographed by the use of a conventional reduction and step and repeat processes to provide the actual masks which are utilized in fabricating integrated circuits.

3,669,667

PREVENTING SPEED LOSS IN OXYGEN SENSITIVE PHOTO-RESIST LAYERS

Eugene R. Skarvinko, Binghamton, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,437
Int. Cl. G03c *1/46*
U.S. Cl. 96—68 **4 Claims**

A method for preventing loss of photographic speed of an oxygen sensitive photoresist by providing a layer of inert gas producing material over the standard photoresist. The gas producing material liberates gas during the exposure step thus protecting the resist.

3,669,668

PRESENSITIZED PRINTING PLATE COATED WITH COLORANT

Leonard James Watkinson and Brian Joseph Moore, Yorkshire, England, assignors to W. H. Howson Limited, Seacroft, Leeds, England

No Drawing. Continuation of abandoned application Ser. No. 639,612, May 19, 1967. This application June 4, 1971, Ser. No. 150,234
Claims priority, application Great Britain, May 26, 1966, 23,754/66
Int. Cl. C03c *1/68*
U.S. Cl. 96—86 P **8 Claims**

A presensitised printing plate, such as a presensitised photolithographic printing plate or a presensitised photoengravers plate, comprising a plate of, for example, aluminum, zinc, magnesium or copper having thereon a coating of a light-sensitive resin selected from starch cinnamate, cellulose cinnamate, polyvinyl cinnamate, starch furfurylacrylate, cellulose furfurylacrylate and polyvinyl furfurylacrylate resins, and a colorant.

3,669,669

CYCLIC POLYISOPRENE PHOTORESIST COMPOSITIONS

Donald L. Klein, Poughkeepsie, N.Y., Michael W. MacIntyre, South Burlington, Vt., and Lawrence J. Rothman, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 28, 1970, Ser. No. 84,833
Int. Cl. G03c *1/52*
U.S. Cl. 96—91 N **5 Claims**

A cyclized polyisoprene/aryl bis-azide sensitized negative photoresist for semiconductor device manufacture containing a maximum of 1.3% sensitizer, and characterized by the three parameters

(a) the percentage of uncyclized isoprene (or monomer) units as a function of sensitizer content, represented by the symbol R, where R=percent uncyclized polyisoprene/percent sensitizer.

(b) the ratio of internal to terminal double bonds in a cyclized material as a function of sensitizer represented by the symbol Q, where Q=IR absorbance of internal C=C/IR absorbance terminal C=C/percent sensitizer, and

(c) a combined sensitizer dependent figure of merit function K where K=QRS with the following maximum limits set to the parameters:

$$Q_{max}=0.47,\ R_{max}=13.0,\ \text{and}\ K_{max}=7.94$$

3,669,670

PHOTOGRAPHIC COMPOSITIONS CONTAINING BIS-ISOTHIURONIUM COMPOUNDS AS DEVELOPMENT ACTIVATORS AND IMAGE STABILIZERS

Grant M. Haist and Wilbert J. Humphlett, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Dec. 2, 1970, Ser. No. 94,568
Int. Cl. G03c *1/06*
U.S. Cl. 96—95 **14 Claims**

Certain bis-isothiuronium compounds having an intermediate ureylene or ether moiety provide activation of a silver halide developing agent upon heating in the absence of a separate development activator. A photographic element or composition containing the bis-isothiuronium compounds and a silver halide developing agent can contain other addenda suitable in photographic elements and/or compositions. The described bis-isothiouranium compounds can also provide stabilization of a resulting developed image.

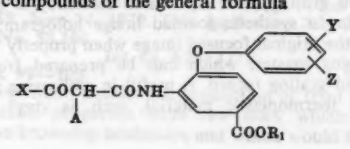
3,669,671

LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC EMULSIONS CONTAINING YELLOW COUPLERS

Masakuni Iwama, Isaburo Inoue, Teruo Hanzawa, Kenro Sakamoto, and Takaya Endo, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

No Drawing. Filed Dec. 12, 1969, Ser. No. 884,751
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 **7 Claims**

New compounds of the general formula



wherein X is $—C(CH_3)_3$ or

W is hydrogen, C_{6-18} acylamino, lower alkoxy, halogen or lower alkyl;

R_1 is an aliphatic hydrocarbon radical having 1–18 carbon atoms; Y and Z are each hydrogen, halogen, lower alkoxy, lower alkyl or $—COOR_2$; A is hydrogen, halogen or $—OCOR_3$;

R_2 and R_3 are each lower alkyl

are found to be useful as yellow-forming color couplers of the protected type in light-sensitive silver halide photographic emulsions. These compounds can be synthesized from readily available starting materials with ease and at cheap cost.

3,669,672
SUPERSENSITIZED SILVER HALIDE PHOTOGRAPHIC EMULSION

Keisuke Shiba, Reiichi Ohi, and Tadao Shishido, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

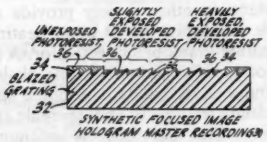
No Drawing. Filed Jan. 9, 1970, Ser. No. 1,837
Claims priority, application Japan, Jan. 10, 1969, 44/1,947
Int. Cl. G03c *1/14*
U.S. Cl. 96—126 **10 Claims**

A spectrally sensitized silver halide photographic emulsion, having improved sensitivity in the red-sensitive region, yet no increase in fogging, comprising a combination of a pentamethinecyanine-type dye and an aromatic heterocyclic compound having a thio-keto structure is disclosed.

3,669,673
RECORDING OF A CONTINUOUS TONE FOCUSED IMAGE ON A DIFFRACTION GRATING

Charles Chung Sen Ih, Trenton, and Michael Jay Lurie, East Brunswick, N.J., assignors to RCA Corporation

Filed Oct. 23, 1970, Ser. No. 83,424
Int. Cl. G03c *5/00*
U.S. Cl. 96—38.3 **4 Claims**



A recording medium blank is employed comprising a substrate having a diffraction grating, composed of a plurality of spaced line ridges, on a surface thereof, together with a photoresist disposed on this surface which fills the spaces between adjacent line ridges. This provides a substantially smooth exterior surface of the photoresist which is situated in proximity with the respective tops of the line ridges making up the diffraction grating. By exposing such a recording blank to a focused image of any complex object and then developing the photoresist, a diffraction grating with modulated efficiency is formed, constituting a synthetic focused image hologram; which displays the original focused image when properly viewed. A stamping master, which can be prepared from this modulated grating record, is useful in embossing replications on thermoplastic material, such as vinyl for instance.

3,669,674
COMPOSITION FOR PRODUCING FRIED COATED COMESTIBLES

Sigmund L. Klug, Bronx, N.Y., Gilbert Finkel, South Amboy, N.J., and Monroe B. Sherain, Brooklyn, N.Y., assignors to DCA Food Industries Inc., New York, N.Y.

No Drawing. Continuation of application Ser. No. 553,026, May 26, 1966, now Patent No. 3,514,294, dated May 26, 1970. This application Dec. 4, 1969, Ser. No. 882,312
The portion of the term of the patent subsequent to May 26, 1987, has been disclaimed
Int. Cl. A23l *1/00*
U.S. Cl. 99—1 **3 Claims**

A foodstuff is prepared for frying by successively alternately applying to the foodstuff dry powder coatings and batter coatings. Each coating contains 60 to 90 parts starch, 1 to 9 parts leavening, 1 to 15 parts sugar and 1 to 15 parts salt, the batter containing, in addition, 85% to 200% water based on the weight of the dry ingredients. The coatings may contain additives such as dry milk solids. Synergism exists at ratios of 1 to 8 parts sugar to 2 to 12 parts salt, 2 to 12 parts salt to 1 to 4 parts leavening, and 1 to 8 parts sugar to 1 to 4 parts leavening.

3,669,675
FLOWABLE STABILIZER SUSPENSIONS

Aubrey P. Stewart, Jr., and John D. Falk, Corning, Iowa, assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed July 15, 1969, Ser. No. 841,996
Int. Cl. A23l *1/04*
U.S. Cl. 99—1 **8 Claims**

Liquid stabilizer suspensions are prepared by pelletizing a stabilizer powder, coating said pellet with a soluble food material and suspending the coated pellet in a saturated aqueous solution of the same coating material or other food material which inhibits dissolution.

3,669,676
FEED INTAKE LIMITING COMPOSITION FOR CATTLE

Melvin R. Karr, Lubbock, Tex., and Dean E. Hodge, St. Louis, Mo., assignors to Ralston Purina Company, St. Louis, Mo.

No Drawing. Filed July 13, 1970, Ser. No. 54,557
Int. Cl. A23k *1/00*
U.S. Cl. 99—7 **6 Claims**

A composition has been developed which has been found to effectively and efficiently limit protein or feed supplement intake to a prescribed amount in cattle when added to the supplement and which in turn allows self feeding of the supplement. The composition which has been found to effectively limit supplement intake contains materials which also individually contribute to the nutritional balance of the feed supplement comprising a mixture of fish oil, diammonium phosphate, ammonium sulfate and meat meal.

3,669,677
METHOD OF MAKING PROTEINACEOUS SOY COMPOSITION HAVING REDUCED MICRO-ORGANISM COUNT

Louis Sair, Evergreen Park, and Irving Melcer, Park Forest, Ill., assignors to The Griffith Laboratories, Inc., Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 631,596, Apr. 18, 1967. This application Feb. 18, 1970, Ser. No. 12,461
Int. Cl. A23j *1/14*
U.S. Cl. 99—17 **8 Claims**

A method for producing a soy concentrate which has reduced bacterial activity wherein (1) defatted soy bean material is extracted with a liquid extracting medium at

the isoelectric pH, (2) the liquid extract having an undesired soluble beany flavor-conferring material is removed and insoluble soy protein material is recovered, (3) subjecting this insoluble material to bactericidal heating at at least about 160° F. at a acid pH or pH in the vicinity of the isoelectric pH to reduce the bacterial activity, (4) raising the pH of the heated soy protein material to 6 to 10.5, and (5) drying the material.

3,669,678

FOOD COMPOSITION PREPARED FROM WHEY AND COMMINUTED SESAME

John H. Kraft, Winnetka, Ill., assignor to John Kraft Sesame Corporation, Paris, Tex.

No Drawing. Continuation-in-part of application Ser. No. 731,290, May 22, 1968. This application Nov. 16, 1970, Ser. No. 90,055

Int. Cl. A23c *21/00*; A23l *1/00*; A21d *13/00*

U.S. Cl. 99—28 **13 Claims**

A composition in liquid, semi-solid, or solid form is prepared from comminuted sesame and whey, which is useful as a food or as an ingredient of foods, especially as a drink or beverage, and in bread, cakes, candy, ice cream, and other bakery products and confections.

3,669,679

GREEN BEAN DECAFFEINATION EMPLOYING FLUORINATED HYDROCARBONS

Hans P. Panzer, Stamford, Conn., Robert S. Yare, New City, N.Y., and Malcolm R. Forbes, Reeds Ferry, N.H., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed Apr. 24, 1970, Ser. No. 31,778

Int. Cl. A23f *1/10*

U.S. Cl. 99—70 **10 Claims**

Decaffeination of green coffee is achieved by extraction with fluorinated hydrocarbons.

3,669,680

PEROXIDE EXTRACTION OF TEA LEAF

Martin Gurkin, Bardonia, N.Y., and Gary Warner Sanderson and Victor Vernon Studer, Englewood, N.J., assignors to Thomas J. Lipton, Inc., Englewood Cliffs, N.J.

No Drawing. Filed Nov. 12, 1969, Ser. No. 876,044

Int. Cl. A23f *3/00*

U.S. Cl. 99—77 **11 Claims**

A process for extracting whole and spent tea leaf using peroxide solutions, including the steps of bringing peroxide into contact with tea leaves in the presence of moisture to extract tea solids removing the leaf residue from the extract and drying the filtrate if desired, to recover the dried tea solids.

3,669,681

SHORTENING COMPOSITION CONTAINING SILICON DIOXIDE AND A BRIDGING AGENT, AND BAKED GOODS CONTAINING SAME

Myron D. Shoaf, Battle Creek, Mich., Frederick M. Ketch, Hemet, Calif., and Thomas S. Wong, Danbury, Conn., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 723,601, Apr. 23, 1968. This application Dec. 9, 1970, Ser. No. 96,649

Int. Cl. A21d *13/00*; A23d *5/00*

U.S. Cl. 99—86 **12 Claims**

The present invention relates to a shortening which is particularly useful in products which are heated prior to consumption. Edible oils are mixed with silicon dioxide and a bridging compound and the result is a shortening that will not weep or run at elevated temperatures, which retains desirable mouth feel characteristics of the untreated oil.

3,669,682

REFRIGERATED DOUGH COMPOSITIONS AND PROCESS FOR PREPARING SAME

Charles William Lutz, Clark, N.J., assignor to FMC Corporation, New York, N.Y.

No Drawing. Filed Apr. 15, 1970, Ser. No. 28,923

Int. Cl. A21d *2/02*

U.S. Cl. 99—90 NF **6 Claims**

Inhibiting crystalline growth in acid pyrophosphate-leavened refrigerated dough compositions by adding to the dough mix a polyphosphate having an average chain length of from 4 to 8.

3,669,683

BAKED GOODS

Simon S. Jackel, Westport, Conn., assignor to Wyandotte Chemicals Corporation, Wyandotte, Mich.

No Drawing. Continuation-in-part of application Ser. No. 692,327, Dec. 21, 1967. This application Oct. 2, 1970, Ser. No. 77,741

The portion of the term of the patent subsequent to Oct. 27, 1987, has been disclaimed

Int. Cl. A21d *2/14, 2/16*

U.S. Cl. 99—91 **5 Claims**

A method of improving the dough conditioning of yeast-raised bakery products which comprises mixing with the ingredients of said bakery products a mixture of: (A) a mixture of conjugated polyoxyalkylene compounds corresponding to the formula:

$$HO(C_2H_4O)_a(C_3H_6O)_b(C_2H_4O)_cH$$

wherein b is an integer sufficiently high to provide a molecular weight of at least about 900 for oxypropylene base and wherein $a+c$ is an integer sufficiently high to provide 5 to 90% of the total molecular weight of the compound, and (B) a mixture of mono- and diglycerides.

3,669,684

PROCESS FOR FLAVORING FOODS

Elmer A. Weaver, Main St., Spring Mount, Pa. 19478

No Drawing. Continuation of application Ser. No. 544,853, Apr. 25, 1966. This application June 11, 1969, Ser. No. 845,592

Int. Cl. A23l *1/22, 1/00*

U.S. Cl. 99—100 **4 Claims**

A process of modifying the flavor of a fresh natural food is described which includes the treating of a fresh natural food with an atmosphere containing an odor characteristic which is capable of being absorbed by the food and continuing the treatment while preserving the food in its fresh state until the necessary flavor modification of the food has occurred. By this means, fresh whole eggs, fresh whole fruit and vegetables, and nuts may have their flavors modifyed to suit the taste.

3,669,685

PREPARATION OF FRIED POTATO PRODUCTS

Merle L. Weaver, Martinez, and Earl Hautala, Richmond, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Continuation-in-part of application Ser. No. 49,550, June 24, 1970. This application July 24, 1970, Ser. No. 58,186

Int. Cl. A23l *1/12*

U.S. Cl. 99—103 **7 Claims**

The invention enables the production of fried products of desirable properties from raw stock which exhibits excessive browning tendencies and which would normally

yield fried products of excessively dark color. Typically, pieces of raw potato are immersed for a short time in a liquid refrigerant (such as liquid nitrogen or dichlorodifluoromethane), leached with warm water, and fried in edible oil.

3,669,686
METHOD OF HEAT TEMPERING POTATOES PRIOR TO FURTHER PROCESSING
Thomas J. Schoch, Ithaca, N.Y., and Jerry L. Sloan, Beaverton, Oreg., assignors to Lamb-Weston, Inc., Portland, Oreg.
No Drawing. Filed July 22, 1969, Ser. No. 843,737
Int. Cl. A23l *1/12*
U.S. Cl. 99—103 **1 Claim**

A process of pretreating potatoes prior to further processing in which whole unpeeled potato tubers or peeled potato pieces are heated to an internal temperature of between about 122° F. and 140° F. for a period of between about 3 and 24 hours to increase the association of the starch molecules in the starch granules without gelatinization of the starch. The process produces a firm potato tissue which resists physical breakdown during further processing.

3,669,687
PROCESS OF PREPARING FROZEN PUDDING COMPOSITION
Augustine D. D'Ercole, White Plains, N.Y., assignor to General Foods Corporation, White Plains, N.Y.
No Drawing. Filed May 5, 1969, Ser. No. 822,022
Int. Cl. A23g *5/00*; A23l *1/14*
U.S. Cl. 99—139 **5 Claims**

Preparing a frozen pudding by cooking pudding ingredients containing a modified food starch at a temperature of from about 230° to about 260° F., cooling the cooked mix to about 100° F. and freezing.

3,669,688
COMESTIBLE STABILIZER COMPOSITION
Hal J. Thompson, Gretna, La., assignor to DCA Food Industries, Inc., New York, N.Y.
No Drawing. Filed Nov. 5, 1969, Ser. No. 874,365
Int. Cl. A23l *1/04*; A23g *3/00*
U.S. Cl. 99—139 **9 Claims**

A stabilizer composition, particularly useful for stabilizing comestible coatings such as sugar glazes, is formed from a major amount of malto-dextrin, and minor amounts of tapioca dextrin and gel-forming substances. The incorporation of such a composition into a glaze comprising sugar and water results in a comestible coating which is non-tacky and is resistant to extremes in ambient atmospheric conditions.

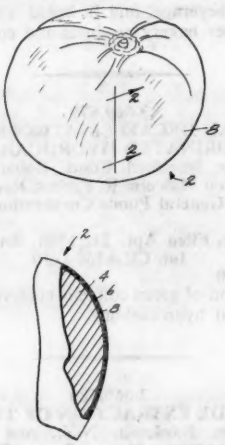
3,669,689
FORTIFICATION OF FOOD OR ALCOHOLIC BEVERAGES WITH COPOLYPEPTIDES
Kazuo Hoshino, Tokyo, and Akio Kanemitsu, Machidashi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
No Drawing. Continuation-in-part of application Ser. No. 765,986, Oct. 8, 1968, which is a continuation-in-part of application Ser. No. 384,517, July 22, 1964. This application Aug. 14, 1970, Ser. No. 63,918
Claims priority, application Japan, June 30, 1963, 38/37,803; Aug. 22, 1963, 38/43,773
Int. Cl. A23l *1/26*
U.S. Cl. 99—140 R **16 Claims**

A food product or alcoholic beverage flavor fortified with ornithine-aspartate copolypeptide or ornithine-aspartic acid copolypeptide. The additive is especially beneficial with food deficient in amino acids, such as rice.

3,669,690
PROCESS FOR RECOVERY OF MEAT ESSENCES
Masahide Nonaka, Moraga, Calif., assignor to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed Jan. 26, 1971, Ser. No. 109,965
Int. Cl. A23l *1/22*
U.S. Cl. 99—140 R **10 Claims**

Process for recovering volatile flavor essences from meat and meat products, using di-n-butyl phthalate as an extraction or entrapment medium.

3,669,691
PRODUCE COATING
Charles F. De Long, New York, N.Y., and Thomas H. Shepherd, Hopewell, N.J., assignors to National Patent Development Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 872,016, Oct. 29, 1969. This application Jan. 13, 1970, Ser. No. 2,632
Int. Cl. A23b *7/16*
U.S. Cl. 99—168 **25 Claims**



Produce is coated with hydrophilic polymers that permit a reduced rate of water vapor transmission and selective permeability to gas transport. The polymer is either a water insoluble, organic solvent soluble hydrophilic polymer consisting of polymers of a hydroxy lower alkyl acrylate, a hydroxy lower alkyl methacrylate, a hydroxy lower alkoxy lower alkyl acrylate or methacrylate or a water soluble polymer of a hydrophilic hydroxyalkyl acrylate or methacrylate.

3,669,692
WATER AND OXYGEN IMPERMEABLE COMMINUTED MEAT PRODUCT CASING
Albin F. Turbak, Danville, Ill., assignor to Tee-Pak, Inc.
Continuation-in-part of application Ser. No. 833,423, June 16, 1969, which is a continuation-in-part of application Ser. No. 518,116, Jan. 3, 1966. This application June 30, 1969, Ser. No. 865,541
The portion of the term of the patent subsequent to Feb. 2, 1988, has been disclaimed
Int. Cl. A22c *13/00*; B32b *15/08*
U.S. Cl. 99—176 **2 Claims**

A casing suitable for the encasing, processing, and storage of products, such as comminuted meat products requiring low oxygen and moisture permeability comprises a base foil member comprising metal foil, the base foil member being coated on opposite sides with a continuous layer of a thermoplastic, at least one layer of which

thermoplastic is heat sealable, and folded and formed into a continuous tube having an adherent, stretch-resistant,

longitudinally extending seam formed by heat sealing the thermoplastic layers at said seam.

3,669,693

GERMANIA-SILICA GLASSES AND METHOD OF COATING

Robert H. Dalton, Corning, and Eugene F. Riebling, Horseheads, N.Y., assignors to Corning Glass Works, Corning, N.Y.

No Drawing. Original application June 24, 1968, Ser. No. 739,211, now Patent No. 3,542,572. Divided and this application Mar. 19, 1970, Ser. No. 24,972
Int. Cl. C23f *7/02*; H01l *3/00*
U.S. Cl. 117—201 8 Claims

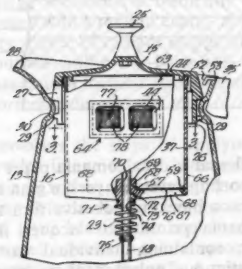
This invention relates to glass compositions consisting essentially of GeO_2 and SiO_2 which are especially suitable as protective insulating surface layers on silicon semiconductor devices.

3,669,694

PERCOLATOR COFFEE BASKET AND FILTER ASSEMBLY

Robert R. Nauheimer, La Grange, and Farees Uddin Khaja, Chicago, Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Filed Mar. 30, 1971, Ser. No. 129,408
Int. Cl. A47j *31/08*
U.S. Cl. 99—310 6 Claims



A cylindrical unitary brewing basket and filter assembly for electric coffee percolators is formed with a plastic basket and woven mesh filters. The top of the brewing basket is open, and the bottom of the basket has a number of ribs which extend outwardly from the center of the basket in spoke-like fashion. A woven mesh filter is secured against the upper surface of the spoke-like ribs in the interior of the basket. Openings are formed in the upper portion of the side wall of the plastic basket to receive plastic frames which contain overflow openings. Woven mesh filter strips are secured across the inside surface of the overflow openings of each of the frames.

3,669,695

TITANIUM AND/OR ZIRCONIUM NITRIDE BASED ARTICLES OF JEWELRY

Ralph K. Iler, Wilmington, Del., and Alan B. Palmer, Columbia, Md., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Nov. 21, 1969, Ser. No. 878,890
Int. Cl. C04b *35/52, 37/00*; B22f *3/00*
U.S. Cl. 106—43 14 Claims

Fine-grained mixture of 30 to 99 volume percent refractory nitride, 0 to 45 volume percent refractory oxides, borides or carbides, and 0 to 50 volume percent metal are sintered or hot-pressed to form articles of jewelry having low porosity, a golden color, perspiration resistance and a high luster when polished.

3,669,696

OPTICAL GLASS

Ichizo Suzuki, Sagamihara-shi, Hideo Yasui, Tokyo, and Kazuhiko Nanba, Sagamihara-shi, Japan, assignors to Kabushiki Kaisha Ohara Kogaku Garasu Seizosho, Sagamihara-shi, Kanagawa-ken, Japan

Filed July 9, 1969, Ser. No. 840,382
Claims priority, application Japan, Sept. 16, 1968, 43/67,808
Int. Cl. C03c *3/00, 3/14, 3/30*
U.S. Cl. 106—47 Q 3 Claims

This invention relates to the optical glass of high refraction and low dispersion having a basic composition in the range of B_2O_3 28–42%, Y_2O_3 2–25%, La_2O_3 5–55%, ThO_2 2–45% of weight ratio. In the attached drawings, FIGS. 1, 2, 3, 4 and 5 are triangular diagrams showing the stable region of glass formation in the composition

$$B_2O_3\text{-}Y_2O_3\text{-}La_2O_3\text{-}ThO_2$$

four component series. FIGS. 6, 7, 8 and 9 are triangular diagrams showing the stable region of glass formation in the composition ratios of the B_2O_3-Y_2O_3-La_2O_3-ThO_2-BaO five component series. FIG. 10 is an *Nd-νd* diagram showing the optical value of some examples in the tables.

3,669,697

DELAY LINE GLASS

Cyril Francis Drake, Harlow, and Robert Walter James Amos, New Barnet, England, assignors to International Standard Electric Corporation, New York, N.Y.

No Drawing. Filed May 28, 1970, Ser. No. 41,570
Int. Cl. C03c *3/04, 3/10*
U.S. Cl. 106—53 2 Claims

A silica/alkali-metal oxide glass composition for use in precision ultrasonic delay lines. By adding Fe_2O_3 as a significant constitutent, a relatively high alkali-metal oxide content can be used without degrading acoustic performance resulting in lower temperatures being necessary to produce a homogenous glass.

3,669,698

SEAL GLASSES

William A. Graf, Willoughby, and Jaroslaw Kohut, Parma Heights, Ohio, assignors to General Electric Company

Filed Dec. 29, 1969, Ser. No. 888,371
Int. Cl. C03c *3/04, 3/08, 5/00*
U.S. Cl. 106—54 5 Claims

Seal glass compositions directly sealable to tantalum and suitable for use as parts of hermetically sealed tantalum electrolytic capacitors, including an effective amount of chromic oxide.

3,669,699

INORGANIC COATING COMPOSITION

Kazuo Doi, Osaka, Jun Nakajima, Kyoto, Hisamitsu Takahashi, Hirakata, and Hideo Tomokawa, Neyagawa, Japan, assignors to Matsushita Electric Works, Ltd., Oaza Kadoma, Kadoma, Japan

No Drawing. Filed July 28, 1970, Ser. No. 59,032
Claims priority, application Japan, July 31, 1969, 44/61,307
Int. Cl. C09d *1/02*; C09j *1/02*
U.S. Cl. 106—74 7 Claims

An inorganic coating composition is provided which comprises (1) a weak alkaline aqueous solution of an

alkali metal silicate and (2) at least one condensed phosphate prepared by heating a mixture of (A) a phosphate having an average composition formula:

$$MO \cdot xP_2O_5 \cdot yH_2O$$

wherein M represents a metal selected from the group consisting of Al, Mg, Ca, Cu, Fe, Mn and Zn, the atomic ratio M/P is 0.25–1.0, each of x and y is a real number and (B) a calcinated double oxide of (a) a metal selected from Group II of the Periodic Table or (b) at least one metal selected from transition metals and metals of Group IV of the Periodic Table.

3,669,700

CEMENT COMPOSITION FOR LINING PIPE

Horace J. Beach and Howard J. En Dean, Houston, Frank E. Frawley, Monahans, and Dick Yates, Midland, Tex., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Apr. 17, 1969, Ser. No. 817,165
Int. Cl. C04b *31/02*
U.S. Cl. 106—98 **6 Claims**

A cement composition for lining steel pipe by centrifugal casting of a slurry of the cement composition comprising sand particles of uniform particle size to avoid gradation of the sand during the centrifugal casting of the lining and portland cement in a concentration adequate to just fill the voids between, and wet the surface of, the sand particles. A small amount of fly ash pozzolan is included in the composition to increase the fluidity of the stiff sludge formed by mixing the cement composition with water used in the casting. After centrifugal casting of the lining in the pipe, the pipe is stored in an undisturbed condition until initial set begins after which the lining is steam cured and water flooded.

3,669,701

LIGHTWEIGHT CEMENTS FOR OIL WELLS

Edwin W. Biederman, Jr., Highstown, N.J., assignor to Cities Service Oil Company, Tulsa, Okla.

Filed Oct. 29, 1970, Ser. No. 85,050
Int. Cl. C04b *7/24, 7/34*
U.S. Cl. 106—120 **4 Claims**

Disclosed herein is a lightweight cement which utilizes small cenospheres primarily consisting of silica-alumina. This material known as float ash is essentially that portion of fly ash that floats on water and has a specific gravity around 0.7. The lightness of float ash and its inherent compressive strengh make it desirable as an ingredient for decreasing the weight and improving the strength of oil well cements.

3,669,702

SILICONE EMULSIONS

Ulrich Rall, Hilden, Rhineland, Herbert Frotscher, Langenfeld, Rhineland, and Manfred Petzold, Dusseldorf-Holthausen, Germany, assignors to Bohme Chemie Gesellschaft mbH, Dusseldorf-Holthausen, Germany

No Drawing. Continuation-in-part of application Ser. No. 687,134, Dec. 1, 1967. This application May 7, 1970, Ser. No. 35,586
Claims priority, application Germany, Dec. 22, 1966, B 90,419
Int. Cl. C08h *3/18*
U.S. Cl. 106—287 **4 Claims**

An aqueous silicone emulsion for treating fibrous materials, containing an oily polysiloxane and as an emulsifying agent a partially-reacted polymeric compound which contains hydrogen atoms attached to aminonitrogen atoms and halohydrin groups, the ratio of said hydrogen atoms to said halohydrin groups being from 1:0.6 to 1:1.5, as well as high-molecular-weight lipophilic radicals and/or polysiloxane radicals.

3,669,703

PROCESS FOR THE TREATMENT OF FLY ASH AND PRODUCT

John T. Pennachetti, St. Catharines, Ontario, and Joseph F. Boux, Burlington, Ontario, Canada, assignors to Enercon International Limited, Hamilton, Ontario, Canada

No Drawing. Original application Dec. 4, 1967, Ser. No. 687,465, now Patent No. 3,533,819, dated Oct. 13, 1970. Divided and this application May 5, 1970, Ser. No. 34,874
Int. Cl. C04b *31/02, 31/10*
U.S. Cl. 106—288 B **3 Claims**

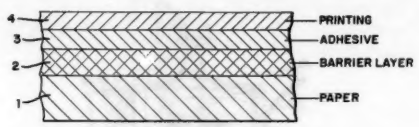
A process for treating fly ash to obtain a multiplicity of valuable products including a quality controlled sintered aggregate product, an iron concentrate product, an improved pozzolan product, and a carbon product which includes the step of air classification of fly ash or a fly ash fraction.

3,669,704

NON-CURLING DECALCOMANIA PAPER COMPRISING A DISCONTINUOUS POLYMER-STARCH PARTICLE BARRIER LAYER

Thomas L. Reiling, 200 Walnut St., Dedham, Mass. 02026

Filed Nov. 28, 1969, Ser. No. 880,722
Int. Cl. B41m *3/12*
U.S. Cl. 117—3.6 **11 Claims**



A water releasable decalcomania paper includes a base member supporting several layers, e.g., a non-porous barrier layer, a non-blocking adhesive film top coating and the decalcomania printing or lacquer. The non-porous barrier layer, containing individual particles of starch and a discontinuous polymer phase preventing contact between at least some of the starch particles, prevents passage of water into the base during application of the top coating, the latter forming the adhesive for the decalcomania printing and made up primarily of dextrin. A polyvinyl alcohol or methyl cellulose layer may be deposited on the dextrin, the dextrin being mechanically or chemically broken. The decalcomania paper may be of the simplex or duplex type and may be of the "face-down" or "slide-off" variety.

3,669,705

CORROSION RESISTANT ARTICLES HAVING A ZINC SURFACE AND PROCESS FOR PREPARING THE SAME

James G. Morrison, Coraopolis, Pa., assignor to National Steel Corporation

No Drawing. Filed July 9, 1969, Ser. No. 840,517
Int. Cl. B44d *1/34;* B05b *5/02;* C09d *5/08*
U.S. Cl. 117—17 **25 Claims**

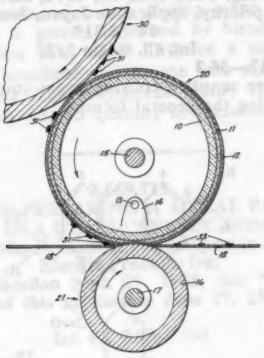
Articles having a zinc surface subject to white rusting are coated with lecithin to improve the corrosion resistance. The invention is especially useful for retarding white rusting of galvanized steel.

3,669,706

FUSING PROCESS AND DEVICE

James F. Sanders, Hudson, Wis., and Ronald R. Baumgartner, White Bear Lake, and Laszlo D. Farago, Stillwater, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 19, 1970, Ser. No. 81,809
Int. Cl. C23c *3/00*
U.S. Cl. 117—21 11 Claims



A process and device for fusing powdered thermoplastic marking media images to the surface of a receptor sheet, e.g. in a copying machine. The fuser device has a fuser roll with a radiant energy transmissive drum covered by a radiant energy transmissive resiliently compressible layer which is coated with a radiant energy absorbing outer skin. A stationary source of radiant energy and a reflector therefor are mounted within the fuser roll to provide a band of intense radiation focused upon the skin at a location generally corresponding to the zone of receptor contact.

The process involves the steps of applying a thermoplastic toner powder image to the fuser roll, contacting the powdered image with a receptor surface, and simultaneously focusing intense radiant energy on the radiant energy absorbing layer bearing the contacted image until the powder fuses and adheres to the receptor surface, and separating the receptor from the roll. A powdered image can also be transferred, e.g., from a semiconductive image source, to the surface of the roll by simply passing the roll over the source bearing the powdered image.

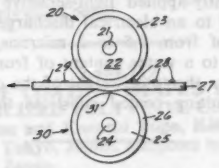
3,669,707

FIXING PROCESS

Charles A. Donnelly, South St. Paul, Minn., and James F. Sanders, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 17, 1969, Ser. No. 867,176
Int. Cl. B44d *1/094*
U.S. Cl. 117—21 6 Claims

Particulate thermoplastic toner is fixed on a receptor surface by directly contacting the toner with a silicone elastomer surface while the toner is in a fused state responsive to the adhesive nature of the silicone elastomer and to the adhesive nature of the receptor to provide for the substantially complete retention of the toner on the receptor surface in a fixed condition. Preferably, the silicone elastomer is free of high surface energy fillers and, most preferably, is both free of high surface energy fillers and contains low surface energy fillers, such as fluorinated organic polymer materials having a surface



energy not greater than about 50 dynes/cm., blended therein.

3,669,708

PROCESS FOR THE MANUFACTURE OF FLEXIBLE SURGICAL AND ORTHOPEDIC BANDAGE MATERIALS

Willy Ernst Reber, Rennweg 73; and Henry Nigst, Kornhausgasse 2, both of Basel, Switzerland; Josef Haas, Im Meiriacher 71, Binningen, Switzerland; and Hans Batzer, Rainweg 7; and Paul Zuppinger, Bodenweg 12, both of Arlesheim, Switzerland

No Drawing. Continuation-in-part of application Ser. No. 438,732, Mar. 10, 1965. This application Mar. 11, 1970, Ser. No. 18,746
Claims priority, application Switzerland, Mar. 20, 1964, 3,619/64
Int. Cl. A61l *15/00*; B44d *1/092, 1/094*
U.S. Cl. 117—33 3 Claims

A process for the manufacture of flexible surgical and orthopedic bandage materials essentially comprising 1,2-epoxy resin impregnated glass fibre fabric having a high filler content and which bandage materials can be shaped and hardened at physiologically acceptable temperature and within surgically acceptable time interval to mechanically stiff surgical and orthopedic permanent supporting dressings, wherein in a first stage a flat structural material which is porous or suitable for use as bandage for patients is impregnated with a liquid, curable 1,2-epoxy resin-curing agent composition and then in a second stage the wet, tacky surface is sprinkled with a sufficient amount of a finely powdered filler, and any excess of filler is removed mechanically, to form a dry-, non-tacky, smooth surface on the resin impregnated flat material. The so-obtained flexible bandage being adapted for conversion into mechanically stiff, hardened surgical and orthopedic permanent supporting dressing on the body of a patient.

3,669,709

METHOD OF MAKING A PHOTOGRAPHIC BASE MATERIAL

Tsuneo Kasugai and Nobuhiko Minagawa, Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed June 1, 1970, Ser. No. 42,515
Claims priority, application Japan, May 31, 1969, 44/42,801
Int. Cl. B44d *1/44*
U.S. Cl. 117—34 10 Claims

A method of making a photographic base material having suitable adhesive properties with respect to a subsequently-applied photographic light-sensitive emulsion, said method comprising applying to a substrate of polyethylene film or a polyethylene-coated paper a member

selected from the group consisting of a first material having suitable adhesive properties with respect to a subsequently-applied light-sensitive emulsion and a second material having suitable adhesive properties with respect to a subsequently-applied light-sensitive emulsion after being subjected to an electrical discharge treatment to a dry thickness of from 0.5 to 3 microns, drying the resulting coating to a water content of from 5 to 30%, by weight, based on the total weight of the coating and subjecting the resulting coated substrate to a corona discharge treatment.

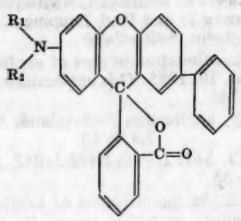
3,669,710

PRESSURE SENSITIVE COPYING SHEET

Shiro Kimura, Teruo Kobayashi, and Sadao Ishige, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed May 7, 1970, Ser. No. 35,596
Claims priority, application Japan, May 7, 1969, 44/34,968
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.2 **10 Claims**

A pressure sensitive copying sheet having as a color former a compound represented by the following formula:



wherein R_1 and R_2 each is an alkyl group having 1 to 5 carbon atoms.

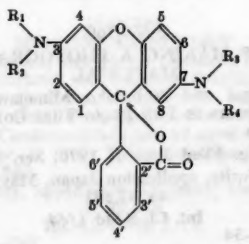
3,669,711

PRESSURE-SENSITIVE COPYING PAPER

Shiro Kimura, Teruo Kobayashi, and Sadao Ishige, Kanagawa, and Masataka Kiritani, Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed May 22, 1970, Ser. No. 40,481
Claims priority, application Japan, May 23, 1969, 44/40,056
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.2 **7 Claims**

Pressure-sensitive copying papers containing a fluoran derivative having the following general formula



wherein R_1 and R_2 each represents an alkyl group having from 1 to 5 carbon atoms; wherein R_3 represents a hydrogen atom, an alkyl group having from 1 to 5 carbon atoms, or a benzyl group; and wherein R_4 represents an aryl group are disclosed.

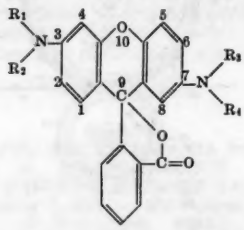
3,669,712

PRESSURE-SENSITIVE COPYING PAPERS

Shiro Kimura, Teruo Kobayashi, and Sadao Ishige, Kanagawa, and Masataka Kiritani, Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed June 26, 1970, Ser. No. 50,303
Claims priority, application Japan, June 27, 1969, 44/50,819
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.2 **3 Claims**

A pressure sensitive copying paper containing a color former having the general formula



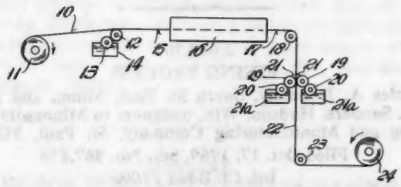
wherein R_1 and R_2 each is an alkyl group having from 1 to 5 carbon atoms, wherein R_3 is an acyl group, and wherein R_4 is an aryl group is disclosed.

3,669,713

TRANSFER ELEMENTS AND PROCESS FOR PREPARING SAME

Douglas A. Newman, Glen Cove, and Allan T. Schlotzhauer, Locust Valley, N.Y., assignors to Columbia Ribbon and Carbon Manufacturing Co., Inc., Glen Cove, N.Y.

Continuation-in-part of application Ser. No. 738,496, June 20, 1968. This application Dec. 31, 1969, Ser. No. 889,577
The portion of the term of the patent subsequent to May 6, 1986, has been disclaimed
Int. Cl. B41m *5/10*
U.S. Cl. 117—36.4 **8 Claims**



A pressure-sensitive transfer sheet or ribbon comprising a porous fabric having on the surface thereof a sponge layer of a foamed synthetic thermoplastic resin, said fabric containing a supply of pressure-transferable ink. In use, the ink is exuded through the sponge layer, which is present at the ink-releasing surface, so that the pattern of the filaments of the fabric is not transmitted to the formed images.

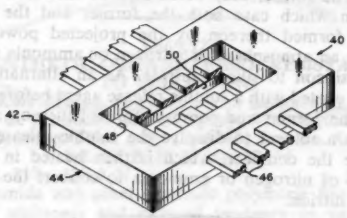
ERRATUM

For Class 117—36.9 see:
Patent No. 3,669,747

3,669,714
PLATING OF POLYSTYRENE
Donald Field Wiley, Big Spring, Tex., assignor to Cosden Oil & Chemical Company, Big Spring, Tex.
No Drawing. Filed June 17, 1969, Ser. No. 834,130
Int. Cl. B44d *1/092;* **C08f** *15/00;* **C23b** *5/60*
U.S. Cl. 117—47 A **5 Claims**

The brightness of metal plating upon polystyrene molded parts is greatly enhanced by blending a small quantity of less than about 15% of a terpolymer of acrylonitrile, butadiene and styrene with the polystyrene before molding. The polystyrene before blending preferably contains a small quantity of preformed rubber in the polymer.

3,669,715
METHOD OF PREPARING A METAL PART TO BE SEALED IN A GLASS-CERAMIC COMPOSITE
Edward Meyer, Russell, Pa., assignor to Sylvania Electric Products Inc.
Original application Sept. 20, 1968, Ser. No. 761,164. Divided and this application June 17, 1970, Ser. No. 46,883
Int. Cl. B32b *7/00*
U.S. Cl. 117—53 **1 Claim**



Disclosed are techniques for fabricating metal-ceramic articles wherein a hermetic seal is desired between the metal-ceramic jointure. The technique involves utilization of a powdered ceramic containing a binding material which is compressed in a mould around the metal part or parts to be incorporated therein. The green part so formed exhibits superior strength and the article is much easier to handle for subsequent firing. Also disclosed is a glass-ceramic powder composition ideally suited to this process, together with methods for treating the metal parts to insure a hermetic seal.

3,669,716
HIGH ENERGY CURING OF PHOTOPOLYMERIZABLE NONAIR INHIBITED POLYESTER RESIN COATINGS
Alex C. Keyl, Walnut Creek, Calif., and Mary G. Brodie, Chicago, Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio
No Drawing. Continuation-in-part of application Ser. No. 701,023, Dec. 5, 1967, now Patent No. 3,511,687, which is a continuation-in-part of application Ser. No. 360,359, Apr. 16, 1964. This application May 11, 1970, Ser. No. 36,414
The portion of the term of the patent subsequent to May 12, 1987, has been disclaimed
Int. Cl. B44d *1/50*
U.S. Cl. 117—62 **16 Claims**

Photopolymerizable nonair inhibited polyester resin coatings having a thickness of 1 to 12 mils (0.001 to 0.012 inch), preferably containing a photosensitizer, are cured by subjecting them to light waves within the range of 1850 to 4000 angstroms. The process is useful in forming coatings on metal, wood or other substrate but is especially valuable for producing cured resinous coatings on wood, e.g., plywood panel.

3,669,717
METHOD OF COATING SHAPED ARTICLES OF PLASTICIZED POLYVINYL CHLORIDE
Akira Akamatsu and Kazushi Togo, Kanagawa-ken, and Yoko Kida, Tokyo, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
Filed Sept. 23, 1970, Ser. No. 74,832
Claims priority, application Japan, Sept. 30, 1969, 44/77,921
Int. Cl. B32b *27/30;* **B44d** *1/14*
U.S. Cl. 117—72 **6 Claims**

The tendency of plasticized PVC surfaces to become tacky because of plasticizer migration is remedied by a coating essentially consisting of poly-γ-alkyl glutamate held to the PVC surface by a primer coating of homopolymers or copolymers of PVC having a low degree of polymerization (500 or less).

3,669,718
SOLVENT RESISTANT ALKENYL AROMATIC RESINOUS SHAPED ARTICLE
Thomas T. Chiu, Midland, Kenneth R. Hock, Gladwin, and Floyd B. Nagle, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Oct. 28, 1969, Ser. No. 871,946
Int. Cl. B32b *27/30*
U.S. Cl. 117—72 **8 Claims**

Polystyrene-type resinous articles are provided with a protective coating of a styrene or vinyl ether maleic anhydride copolymer salt which provides a solvent resistant coating and prevents stress cracking and softening of the styrene-type article.

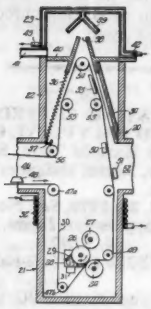
3,669,719
COMPOSITE ARTICLES HAVING METALLIC COATING WITH HIGH TEMPERATURE LUBRICITY
Clinton M. Doede, Hamden, and Eugene E. Combs, Northford, Conn., assignors to Quantum, Inc., Wallingford, Conn.
No Drawing. Filed Mar. 2, 1970, Ser. No. 15,866
Int. Cl. C23c *7/00*
U.S. Cl. 117—93.1 PF **6 Claims**

Metal coatings on non-metallic and metallic substrates, including bearing metal alloy coatings exhibiting lubricity at high temperatures, are prepared by directing a plasma flame at a non-metallic substrate, such as a polyimide substrate or a metal substrate such as titanium, stainless steel, etc. and injecting into one of the gas streams entering the said plasma flame a copper-nickel-indium alloy in solid particulate form and depositing on the said substrate an adherent, dense coating having high temperature surface lubricity.

3,669,720
PRINTING AND COATING METHOD
Robert K. Remer, Evanston, Ill., assignor to Inca Inks, Inc., Northbrook, Ill.
Original application May 14, 1965, Ser. No. 455,936. Divided and this application June 25, 1969, Ser. No. 850,292
Int. Cl. B44d *1/44*
U.S. Cl. 117—93.31 **5 Claims**

A method for coating web and object surfaces wherein a formulation including a coating component dispersed in a solvent vehicle is deposited onto the web or object surface which is then subjected to ultrasonic irradiation for

facilitating vaporization of the solvent constituent in the formulation and/or polymerization and crosslinking



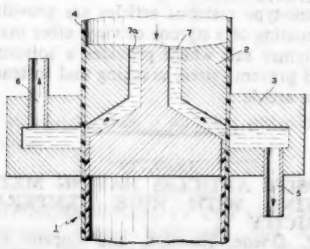
within the coating component while on the web or object surface.

3,669,721

PROCESS FOR THE CONTINUOUS PRODUCTION OF COATED TUBULAR STRUCTURES

Eugen Jager, Bomlitz, Germany, assignor to Wolff Walsrode Aktiengesellschaft, Walsrode, Germany

Filed Feb. 11, 1970, Ser. No. 10,440
Claims priority, application Germany, Feb. 21, 1969, P 19 08 698.7
Int. Cl. B05b *13/06*; B44d *1/10*
U.S. Cl. 117—95 2 Claims



A process for the continuous production of coated tubular structures by simultaneously venting from one side and impregnating with a coating material from the other side, a tubular structure and an apparatus for carrying out the process.

3,669,722

FREE FLOWING PELLETS OF UNCURED ELASTOMERIC MATERIAL

William A. Bishop, Baton Rouge, La., assignor to Copolymer Rubber & Chemical Corporation, Baton Rouge, La.

Filed June 25, 1969, Ser. No. 836,416
Int. Cl. B32b *25/08*; B44d *5/08*
U.S. Cl. 117—100 C 5 Claims

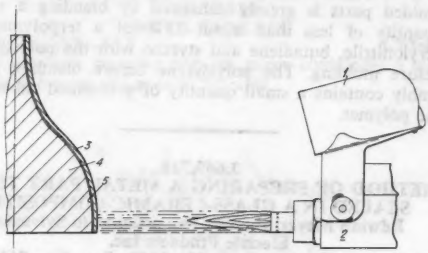
Free flowing pellets of tacky elastomeric material in which the elastomeric material forms a core coated with one or more layers in which the outermost layer is a hard non-tacky layer containing a film forming material.

3,669,723

SPRAY DEPOSITION OF SILICON POWDER STRUCTURES

Norman Lawrence Parr, Shepherds Croft Ridge, Wareham, England, and Robin Lawford Brown, 44 Leybourne Ave., Ensbury Park, Bournemouth, England

Continuation of application Ser. No. 614,855, Feb. 9, 1967. This application Jan. 21, 1970, Ser. No. 4,449
Claims priority, application Great Britain, Feb. 9, 1966, 5,565/66
Int. Cl. B44d *1/097*
U.S. Cl. 117—105.2 2 Claims



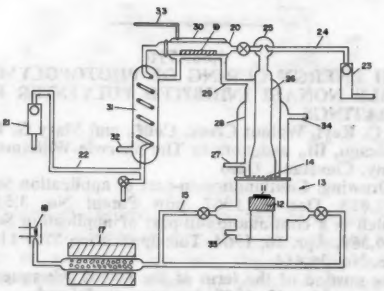
Spray deposition of silicon powder by projection from a flame gun on to a preheated former, which may be capable of being rotated or reciprocated to facilitate continuous and even deposition of silicon powder on the former. The former may be formed of silicon or silicon nitride, in which case both the former and the silicon compact formed thereon by the projected powder are heated in an atmosphere of nitrogen or ammonia to convert the silicon to silicon nitride. As an alternative, the former is coated with a soluble release agent before spraying and the former and compact formed thereon are immersed in a solvent to dissolve the soluble release agent to release the compact, which is then heated in an atmosphere of nitrogen or ammonia to convert the silicon to silicon nitride.

3,669,724

METHOD OF VAPOR DEPOSITING A TUNGSTEN-TUNGSTEN OXIDE COATING

Warren L. Brand, Sunnyvale, Calif., assignor to Motorola, Inc., Franklin Park, Ill.

Original application Jan. 26, 1968, Ser. No. 700,817. Divided and this application Sept. 28, 1970, Ser. No. 76,333
Int. Cl. C23c *11/08, 11/00, 13/00*
U.S. Cl. 117—106 R 3 Claims



A tungsten-tungsten oxide electrical resistance film is deposited by passing a gaseous mixture containing oxygen

and tungsten hexacarbonyl vapor in contact with a suitable substrate maintained at a temperature sufficiently high to decompose the carbonyl vapor. The sheet resistance of the deposited film can be varied from 50 ohms per square to 5,000 ohms per square by controlling the molar ratio of oxygen to tungsten hexacarbonyl, thereby determining the ratio of tungsten to tungsten oxide in the cermet film. The film is particularly suited for use as a resistor in the fabrication of integrated circuits, and is compatable with diffused active components of semiconductor devices.

3,669,725

FLAMEPROOFING OF POLYESTER-CELLULOSE FIBRE MATERIALS

Hermann Nachbur, Dornach, Joerg Kern, Oberwil, Basel-Land, and Arthur Maeder, Therwil, Switzerland, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Filed Mar. 26, 1970, Ser. No. 24,391
Claims priority, application Switzerland, Mar. 31, 1969, 4,858/69
Int. Cl. C09d *5/18, 3/28*
U.S. Cl. 117—136 **12 Claims**

A process for the flameproofing of mixed fiber materials of polyester and cellulose is provided in which an aqueous preparation is applied to these materials, which contains a reaction product of a nitrogen compound, a phosphonopropionic acid amide, formaldehyde and optionally an alkanol. Afterwards the materials are dried and subjected to a heat treatment. The fiber materials then have a very good permanent flame resistance. Preferred fiber materials are polyester-cotton mixed fabrics.

3,669,726

SYNTHETIC ORGANIC FIBER RESISTANT TO YELLOWING

Edgar Karl Tinder, Powhatan, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Aug. 13, 1969, Ser. No. 849,904
Int. Cl. B32b *27/34, 27/14*
U.S. Cl. 117—138.8 N **3 Claims**

Polyamide and other synthetic polymeric fibers of increased whiteness and reduced tendency to yellow are obtained by coating the same with defined amounts of discrete particles of carbon black of colloidal size.

3,669,727

IMPREGNATION AND LAMINATION RESIN SOLUTIONS, METHODS AND ARTICLES PRODUCED THEREBY

Douglas G. Raymond, Parma Heights, Ohio, assignor to SCM Corporation, Cleveland, Ohio

No Drawing. Filed Mar. 4, 1968, Ser. No. 709,930
Int. Cl. B27k *3/34;* **B21h** *1/34*
U.S. Cl. 117—148 **13 Claims**

New melamine acrylate-polyester resin solutions and impregnation methods suitable for use in impregnating or coating paper, wood, cloth, fabric, asbestos, and other webbed, fibrous or porous base materials are provided. These impregnated base materials are suitable for fusion to a substrate to form laminated composite articles.

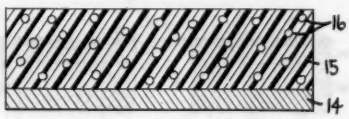
3,669,728

METHOD FOR PROVIDING OPAQUE, MICROCELLULAR, FILM COATINGS ON SUBSTRATES AND THE RESULTANT PRODUCT

Jerome A. Seiner, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of applications Ser. No. 741,502, July 1, 1968, and Ser. No. 745,433, July 17, 1968. This application June 22, 1970, Ser. No. 48,199
Int. Cl. C07d *3/48*
U.S. Cl. 117—161 UA **21 Claims**

The disclosed invention relates to films from a novel latex mixture which are non-porous, microcellular and opaque in the absence of an opacifying agent. The preparation of the films of the disclosed invention comprises providing control techniques for entrapping a sufficient amount of a liquid non-solvent for the polymer in the polymer matrix of a latex after the continuous phase removal, so that upon evaporation of the nonsolvent from a coalesced and tack-free polymer matrix, a resulting opaque



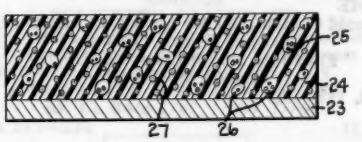
and continuous, non-porous film is produced which will have minute, discrete and substantially closed voids and which is opaque in the absence of an opacifying agent such as pigment. The disclosed invention also relates to opaque films with enhanced optical properties produced by the inclusion of pigments, fluorescent materials and optical brighteners in the opaque films in such a manner as to maximize their effectiveness therein.

3,669,729

METHOD FOR PRODUCING ARTICLES HAVING PIGMENTED COATINGS WITH IMPROVED HIDING ABILITY AND THE RESULTANT PRODUCT

Jerome A. Seiner, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of applications Ser. No. 741,502, July 1, 1968, and Ser. No. 745,433, July 17, 1968. This application June 22, 1970, Ser. No. 48,999
Int. Cl. C09d *3/48*
U.S. Cl. 117—161 UA **17 Claims**



The disclosed invention relates to improved opaque films which are continuous, microcellular and non-porous possessing unusual hiding ability and opacity. The films of this invention are prepared from a novel latex mixture comprising: non-elastomeric polymeric material, water, non-solvent for the polymeric material in a weight ratio of non-solvent to polymer solids of about 0.05 to about 3:1.0 and an opacifying pigment in a weight ratio of pigment to polymer solids of from about 0.1 to about 5:1. The non-solvent is selected such that it has a boiling point range above that of water and having sufficiently low volatility to remain entrapped in the polymeric matrix when the composition has reached a quasi-rigid or tack-free state when applied as a film. Once the film has become tack-free the non-solvent is evaporated so as to leave behind minute, closed cells which enhance the hiding and opacity of the film. The disclosed invention also relates to opaque films with enhanced optical properties produced by the inclusion of colored pigments, dyes, fluorescent materials and optical brighteners in the unusually opacified films in such a manner as to maximize their effectiveness therein.

3,669,730

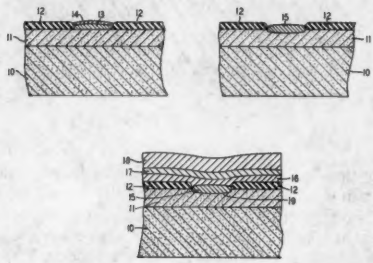
MODIFYING BARRIER LAYER DEVICES

Martin Paul Lepselter, Bethlehem, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Original application Aug. 1, 1968, Ser. No. 749,396. Divided and this application Apr. 24, 1970, Ser. No. 31,730

Int. Cl. H01l 9/00

U.S. Cl. 117—200 4 Claims



A method is described for producing surface barrier diodes with predetermined barrier heights. At least two metals are mixed in a predetermined proportion and deposited on a silicon substrate. Sufficient heat is applied to cause the metals to react with the substrate, forming a mixed metal silicide region. By varying the proportions of the metals a desired barrier height can be achieved.

ERRATUM

For Class 117—201 see:
Patent No. 3,669,693

3,669,731

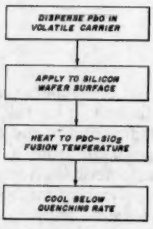
SILICON DEVICE HAVING A LEAD-SILICATE THEREON AND METHOD OF FORMING THE SAME

Gerald C. Huth, Chester Springs, Pa., assignor to General Electric Company

Filed June 30, 1969, Ser. No. 837,717

Int. Cl. H01l 3/00

U.S. Cl. 117—201 7 Claims


DISPERSE PbO IN VOLATILE CARRIER
APPLY TO SILICON WAFER SURFACE
HEAT TO PbO–SiO2 FUSION TEMPERATURE
COOL BELOW QUENCHING RATE

A slurry of an oxide of lead and an organic vehicle is prepared and applied by suitable means to a clean silicon wafer. The organic vehicle is allowed to volatilize. The silicon wafer is then heated in an oxygen atmosphere to a temperature at least above the eutectic of the oxide of lead and silicon dioxide and preferably above the liquidus for that composition, and maintained at that temperature for a short time to form a lead-silicate glass of desired thickness. By cooling the silicon wafer at a controlled rate, the glass removes or getters any impurities which might degrade the performance of any P–N junction therein by diffusion during the process and thereafter protects the silicon wafer from the ambient.

3,669,732

PROCEDURE FOR MAKING SEMICONDUCTOR DEVICES OF SMALL DIMENSIONS

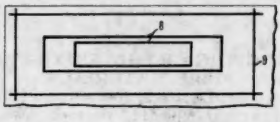
Simon Middelhoek, Adliswil, and Giovanni Sasso, Zurich, Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 22, 1969, Ser. No. 827,495

Claims priority, application Switzerland, June 28, 1968, 9,711/68

Int. Cl. H01l 7/00

U.S. Cl. 117—212 3 Claims



A method for making a high speed field effect transistor of the planar type with Schottky-barrier or junction contacts, in which all apertures required for production of electrodes in an insulating layer covering the semiconductor body are produced simultaneously.

A field effect transistor in which the gate electrode surrounds the drain electrode in a loop while the source electrode is subdivided and its parts essentially surround the gate electrode. The contact lands of the gate electrode are arranged essentially outside the region of capacitive influence of the source electrode. A semiconductor surface is metallized by depositing metal through a mask aperture smaller than the surface to be metallized followed by heating to cause the metal to wet the surface and spread over the entire surface.

3,669,733

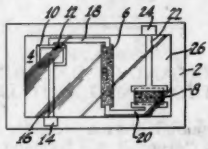
METHOD OF MAKING A THICK-FILM HYBRID CIRCUIT

Trevor Richard Allington, Indianapolis, Ind., assignor to RCA Corporation

Filed Dec. 12, 1969, Ser. No. 884,629

Int. Cl. H01c 7/00, 17/00; B44d 1/18

U.S. Cl. 117—212 3 Claims



A transparent, screen-printable insulation composition for protecting components of a hybrid integrated circuit comprising a transparent synthetic resin, mica flake and resin solvent in such proportions as to be screen-printable. Also, a method of making a hybrid integrated circuit in which passive components are trimmed after the protective coating is applied.

3,669,734

METHOD OF MAKING ELECTRICAL CONNECTIONS TO A GLASS-ENCAPSULATED SEMICONDUCTOR DEVICE

Charles Junior Jacob, Terre Haute, and Gerald Wayne Lawton, Indianapolis, Ind., assignors to RCA Corporation

Filed Aug. 5, 1970, Ser. No. 61,306

Int. Cl. C03c 15/00; B44d 1/14

U.S. Cl. 117—217 7 Claims

Method of making electrical connections to a glass-encapsulated semiconductor device having aluminum contact pads on a silicon dioxide passivation layer. The

method comprises etching away the glass over the contact pads with a solution that etches rapidly but does not attack the aluminum and which contains a soluble compound of a metal having an electrode potential below aluminum in the electrochemical series. The metal compound is present in high enough concentration to deposit

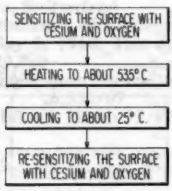
on the aluminum surface faster than the etchant can remove it. A thicker layer of solder-wettable metal is then electrolessly deposited on the first metal layer and solder bumps may then be formed on the second metal layer. The second metal layer may be composed of the same metal as the first.

3,669,735

METHOD FOR ACTIVATING A SEMICONDUCTOR ELECTRON EMITTER

Dennis Glendon Fisher, Princeton, N.J., assignor to RCA Corporation

Filed Sept. 4, 1970, Ser. No. 69,537
Int. Cl. H01l *7/32, 7/44*
U.S. Cl. 117—224 **10 Claims**


SENSITIZING THE SURFACE WITH CESIUM AND OXYGEN
HEATING TO ABOUT 535° C.
COOLING TO ABOUT 25° C.
RE-SENSITIZING THE SURFACE WITH CESIUM AND OXYGEN

The method for activating a semiconductor to maximize its electron emission, especially photoemission, includes the steps of sensitizing a cleaned semiconductor with at least a strongly electronegative material and a strongly electropositive material, thereafter heating the semiconductor to a temperature of between about 470° C. ±10° C., and 590° C.±10° C., then resensitizing the semiconductor with at least a strongly electropositive material.

3,669,736

TEXTILE MATERIAL HAVING A DURABLE ANTI-STATIC PROPERTY AND THE FIBERS TO BE USED FOR ITS PURPOSE

Shigeru Fujiwara, Kenji Nagae, and Tomomi Okuhashi, Tokyo, Japan, assignors to Teijin Limited, Osaka, Japan

No Drawing. Filed May 26, 1969, Ser. No. 827,931
Claims priority, application Japan, June 4, 1968, 43/37,735
Int. Cl. C08f *47/12*
U.S. Cl. 117—226 **5 Claims**

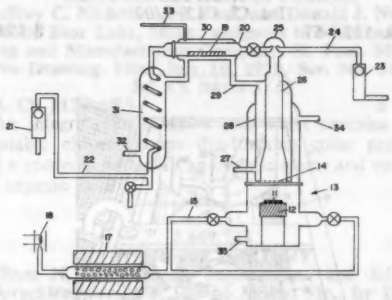
Electrically conductive fibers composed of (1) a substrate which is a fiber of synthetic organic polymer and (2) a coating adhered to said substrate, said coating being of average thickness of 0.5 to 15 microns and comprising a matrix of a hardened resin mixture of an acrylonitrile-butadiene copolymer and a phenolic resin compatible with the copolymer, and finely divided silver and/or carbon dispersed in said matrix. The electrically conductive fibers have a very durable electric conductivity as well as excellent functional properties of normal textile fibers.

3,669,737

VAPOR-PLATED CERMET RESISTOR

Warren L. Brand, 942 Ponderosa, Apt. 36, Sunnyvale, Calif. 94086

Continuation of application Ser. No. 700,817, Jan. 26, 1968. This application Sept. 28, 1970, Ser. No. 76,332
Int. Cl. B44d *1/18;* **H01c** *7/00*
U.S. Cl. 117—227 **2 Claims**



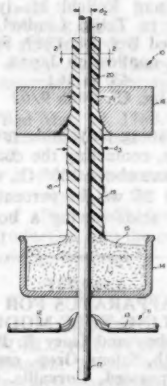
A tungsten-tungsten oxide electrical resistance film is deposited by passing a gaseous mixture containing oxygen and tungsten hexacarbonyl vapor in contact with a suitable substrate maintained at a temperature sufficiently high to decompose the carbonyl vapor. The sheet resistance of the deposited film can be varied from 50 ohms per square to 5,000 ohms per square by controlling the molar ratio of oxygen to tungsten hexacarbonyl, thereby determining the ratio of tungsten to tungsten oxide in the cermet film. The film is particularly suited for use as a resistor in the fabrication of integrated circuits, and is compatible with diffused active components of semiconductor devices.

3,669,738

POLYESTER COATED WIRE

Steve G. Cottis, Buffalo, Bernard E. Nowak, Lancaster, and James Economy, Buffalo, N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed May 28, 1969, Ser. No. 828,652
Int. Cl. B44d *1/42, 1/094, 1/097*
U.S. Cl. 117—232 **11 Claims**



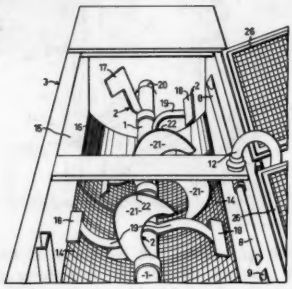
A wire insulated with an impervious oxybenzoyl polyester coating which can be produced by drawing the wire having a porous coating through a die.

3,669,739

PROCESS FOR RECOVERY OF STARCH AND GLUTEN BY WASHING A DOUGH OF WHEAT FLOUR

Erik Plaven, Scheelegatan 1, Stockholm K, Sweden

Continuation-in-part of applications Ser. No. 476,128 and Ser. No. 476,129, both July 30, 1965. This application June 15, 1970, Ser. No. 46,469
Claims priority, application Sweden, Aug. 4, 1964, 9,413/64
Int. Cl. C13l *1/02*
U.S. Cl. 127—67 8 Claims



A process for recovery of wheat starch and gluten from a dough of wheat flour, as compared with all other flour starches, by simultaneously mechanically treating and spray washing the dough with a starch absorbing liquid, the latter of which is quickly carried away from the recovery region so as to preclude an undue build-up of wash liquid, with the dough being subjected to repeated shredding and cutting actions by the improved disposition and use of improved scrapers, spreading and cutting members revolving with a rotatable shaft extending axially within a perforated semi-circular troughed treatment zone, whereby the gluten network of the dough mix is more efficiently broken down, and the starch is washed therefrom, and the reformed gluten lumps respectively being recovered in different areas for further predetermined treatment or commercial use.

3,669,740

METHOD OF CLEANING POLYAMIDE PRODUCING APPARATUS

Akira Yamamoto and Keiichi Moriyama, Mihara-shi, Japan, assignors to Teijin Limited, Osaka, Japan

No Drawing. Filed Oct. 24, 1969, Ser. No. 869,361
Claims priority, application Japan, Nov. 5, 1968, 43/81,161
Int. Cl. B08b *9/02*
U.S. Cl. 134—22 3 Claims

A method of cleaning polyamide producing apparatus is disclosed, namely, contacting the coating on the apparatus, at a temperature above 200° C., with a composition comprising at least 25 weight percent of one or more organic carboxylic acids having a boiling point above 220° C.

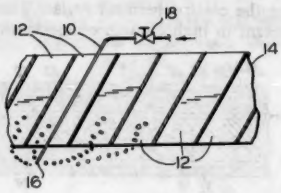
3,669,741

METHOD AND APPARATUS FOR AIR-CLEANING SETTLING TUBE MODULES

Richard G. Dunnahoe and Gary B. Bondahl, Corvallis, and Paul W. Roth, Salem, Oreg., assignors to Neptune Microfloc, Incorporated, Corvallis, Oreg.

Filed Jan. 28, 1971, Ser. No. 110,398
Int. Cl. B08b *9/00*
U.S. Cl. 134—22 R 3 Claims

Settling tube modules are cleaned of deposited material by injecting air below them while they are immersed in the liquid of the settling basin. The air flows upwardly through the modules causing displacement of liquid from and turbulence in the individual tubes thereof, the settling surfaces being scrubbed clean by the high liquid velocities achieved.

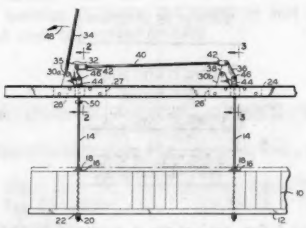


3,669,742

METHOD AND APPARATUS FOR CLEANING SETTLING TUBE MODULES

Alfred F. Slechta, Corvallis, Oreg., Gordon L. Culp, Kennewick, Wash., and Richard G. Dunnahoe, Corvallis, Oreg., assignors to Neptune Microfloc, Incorporated, Corvallis, Oreg.

Filed July 30, 1970, Ser. No. 59,425
Int. Cl. B08b *9/00*
U.S. Cl. 134—23 2 Claims



Settling tube modules are cleaned of deposited material by reciprocating the module while immersed in the liquid of the settling basin to cause relatively rapid motion of the liquid through the individual settling tubes thereof. Good cleaning is achieved when the edge of the module is reciprocated through an amplitude of about two inches and the velocity of the module in the liquid during the reciprocation attains a value of at least two inches per second.

3,669,743

RECHARGEABLE ELECTROCHEMICAL CELL WITH SOLID ZINC SALT COMPLEX ELECTROLYTE

Frank E. Swindells, Arlington, Va., assignor to Melpar, Inc., Falls Church, Va.

Filed Apr. 14, 1969, Ser. No. 815,717
Int. Cl. H01m *21/00, 35/00*
U.S. Cl. 136—6 15 Claims

An electrochemical cell has a zinc electrode and a silver electrode between which is positioned a solid nonhygroscopic electrolyte in the form of a complex compound of a zinc salt with ammine, hydrazine, hydroxylamine, or aniline; such as zinc chloride ammine. A further layer of silver chloride may initially be disposed between the solid complex and the silver electrode, or may subsequently be formed in that location upon charging of the cell. The preferred salts to be converted to the complex are zinc chloride, zinc bromide, and zinc sulfate.

3,669,744

HERMETICALLY SEALED NICKEL-HYDROGEN STORAGE CELL

Boris Ioselevich Tsenter, Nalichnaya ulitsa dom 41, korpus 1, kv. 9; Vyacheslav Mikhailovich Sergeev, Guanskaya ulitsa 15, kv. 10; and Alexandr Ilich Kloss, Omskaya ulitsa 13, kv. 12, all of Leningrad, U.S.S.R.

Filed Feb. 25, 1971, Ser. No. 118,645
Int. Cl. H01m *29/02*
U.S. Cl. 136—28 **2 Claims**

The present invention relates to chemical sources of electricity, and more specifically to hermetically sealed nickel-hydrogen storage cells.

A hermetically sealed nickel-hydrogen storage cell with positive nickel-oxide electrodes and negative hydrogen electrodes according to the invention is characterized in that the thicknesses of the negative and positive electrodes are in the ratio of from 1:1 to 1:20; the volume of electrolyte and the volume of the pores in said electrodes and said separator are in the ratio from 5:10 to 9:10; and there is 0.5×10^{-3} to 2×10^{-3} cubic metres of gas per kilogram (mass) of nickel hydroxide in the positive nickel-oxide electrode.

3,669,745

ACCUMULATOR ELECTRODE WITH CAPACITY FOR STORING HYDROGEN AND METHOD OF MANUFACTURING SAID ELECTRODE

Klaus Beccu, Onex, Geneva, Switzerland, assignor to Battelle Memorial Institute, International Division, Carouge, Geneva, Switzerland

No Drawing. Continuation of abandoned application Ser. No. 726,234, May 2, 1968. This application Apr. 24, 1970, Ser. No. 29,740
Claims priority, application Switzerland, May 2, 1967, 6,333/67
Int. Cl. H01m *35/02*
U.S. Cl. 136—20 **2 Claims**

An accumulator electrode with capacity for storing hydrogen, having an active component constituting at least 40% by weight of the electrode and consisting of a hydride of a metal belonging to the third, fourth or fifth group of transition elements. The electrode further contains nickel, copper, silver, iron or chrome-nickel steel alloyed with the active component and comprises a metallic supporting structure. A method of manufacturing this electrode, comprises preparing a metal powder containing the active component and said other metal and sintering said powder in hydrogen at 700 to 1000° C.

3,669,746

SEPARATORS FOR SECONDARY ALKALINE BATTERIES HAVING A ZINC-CONTAINING ELECTRODE

John L. Devitt, Denver, and Donald H. McClelland, Littleton, Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Aug. 3, 1970, Ser. No. 62,225
Int. Cl. H01m *43/02, 3/00*
U.S. Cl. 136—30 **16 Claims**

A sealed or resealably safety-valved alkaline zinc electrode-containing battery cell is disclosed employing a multi-layer separator material which is composed of:

(1) A first layer in close engagement with the zinc electrode, microscopically homogeneous, non-reticulated, highly absorbing and retentive of electrolyte, and providing a uniformly wetted interface with the zinc electrode substantially lacking occluded voids;

(2) A second layer, contiguous to the opposite polarity electrode, which is composed of the same material as the first layer, or of a more porous, reticulated and less-retentive material than the first layer; and optionally,

(3) A third layer, interposed between the first and second layers, of a semi-permeable membranous layer. The net effect of this multi-layer separator is to provide a variance in separator material characteristics normally to and transversely between the electrodes.

3,669,747

HEAT-SENSITIVE COPY-SHEET

Geoffrey C. Nicholson, St. Paul, and Donald J. Newman, White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed July 10, 1970, Ser. No. 54,003
Int. Cl. B41m *5/18*
U.S. Cl. 117—36.9 **8 Claims**

An integral heat-sensitive copy-sheet contains a protonatable chromogenous dye-forming color progenitor and a cocrystal adduct of an organic amine and volatilizable organic acid.

3,669,748

THERMAL BATTERY

William N. McCullough, Joplin, Mo., and Edwin E. Spracklen, deceased, late of Joplin, Mo., by Dorothy H. Spracklen, legal representative, Joplin, Mo.; said McCullough assignor to Eagle-Picher Industries, Inc., Cincinnati, Ohio

Continuation of application Ser. No. 763,483, Sept. 16, 1968. This application June 8, 1970, Ser. No. 48,797
Int. Cl. H01m *21/14, 17/06*
U.S. Cl. 136—83 T **2 Claims**

A thermal battery having a plurality of stacked electro-chemical couples each including a pair of positive and negative electrodes between which is sandwiched a solid electrolyte liquifiable when sufficiently heated to provide substantially instantaneous battery activation, and a plurality of insulating rings each associated with a different pair of electrodes and enclosing the peripheral edge of only one of the electrodes of the associated pair for preventing alloys which form by chemical interaction of the electrolyte and one or more of the electrodes from bridging and thereby short-circuiting the electrode pair. In a preferred thermal battery, the insulating ring of each couple also encloses the peripheral edge of the electrolyte, preventing the electrolyte, when liquified, from leaving the space between the electrodes and thereby increasing the battery internal resistance and decreasing its output voltage.

3,669,749

METHOD OF OPERATING ELECTROCHEMICAL CELLS WITH INCREASED CURRENT DENSITY AND OXYGEN EFFICIENCY

Robert J. Allen, Saugus, and Henry G. Petrow, Cambridge, Mass., assignors to Prototech Company, Cambridge, Mass.

No Drawing. Filed Mar. 20, 1968, Ser. No. 719,292
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 R **4 Claims**

This disclosure is primarily concerned with the discovery of the improvement in the current density and oxygen efficiency of alkali media fuel cells and the like effected by the introduction into the cathode region thereof of a source of oxidizable boron.

3,669,750

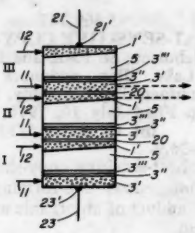
FUEL CELL SYSTEM

Walter Juda, Lexington, Mass., assignor to Prototech Incorporated, Cambridge, Mass.

Continuation of application Ser. No. 260,457, Feb. 25, 1963. This application Dec. 24, 1968, Ser. No. 788,687
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 **8 Claims**

Stacked fuel cells in which successive anode and cathode electrodes are porous supports juxtaposed with a thin im-

pervious conductive layer. Each anode support is provided with a thin hydrogen-permeable layer at the side thereof facing the electrolyte. Hydrogen-containing fuel is reformed in situ by providing reformation catalysts



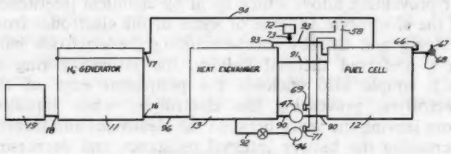
internally of the anode supports within the pores thereof. Fuel and oxidant are applied to one end of the anode and cathode electrodes, and vents are provided at the opposite end. Venting is assisted by electrode tapering or tilting.

3,669,751

ELECTRIC BATTERY COMPRISING A FUEL CELL HYDROGEN GENERATOR AND HEAT EXCHANGER

Peter D. Richman, 164 Leach Ave., Park Ridge, N.J. 07656

Filed Mar. 15, 1967, Ser. No. 623,465
Int. Cl. H01m *27/14*
U.S. Cl. 136—86 C **22 Claims**



An electric battery of very high capacity per pound. The preferred embodiment is a self-balancing system having a hydrogen-oxygen fuel cell, a circulating KOH electrolyte and a hydrogen generator in which an Si-Al mixture is reacted with the electrolyte to produce hydrogen and an insoluble aluminum silicate, thus taking up the water generated in the fuel cell. In the fuel cell the electrodes preferably have a hydrophobic surface on the gas side and a hydrophilic bubble barrier on the electrolyte side.

3,669,752

METHOD OF OPERATING FUEL CELL

Robert L. Novack, Hanover, Mass., David M. Moulton, Knoxville, Tenn., and Walter Juda, Lexington, Mass., assignors to Prototech Company, a division of Bolt Beranek and Newman Inc., Cambridge, Mass.

Original application Apr. 4, 1966, Ser. No. 539,768, now Patent No. 3,471,334, dated Oct. 7, 1969. Divided and this application Aug. 4, 1969, Ser. No. 847,033
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 **5 Claims**

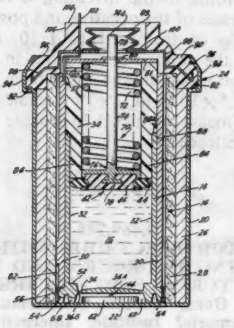
Electrolytic cell operation in which the electrolyte is agitated near one of a pair of electrodes and a barrier is interposed between the electrodes and is physically combined with structure of one of the electrodes. The cell may have an alkali-metal hydroxide electrolyte maintained at a temperature of at least 300 degrees C. to render the electrolyte molten and anhydrous. Peroxide and superoxide may function as the electrochemical oxidant of the cell.

3,669,753

RESERVE CELL, SPRING-CONTROLLED

Gordon E. Kaye, Irvington, N.Y., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Sept. 22, 1970, Ser. No. 74,394
Int. Cl. H01m *21/10*
U.S. Cl. 136—114 **8 Claims**



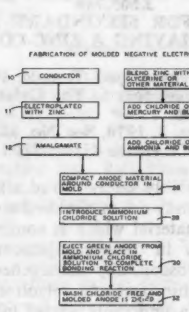
A reserve type cell with a charge volume of electrolyte held confined in a closed cylinder with a frangible end wall closure and a front piston closure operable by a spring held compressed until cell activation is desired, at which time the spring is released to hydrostatically press the fluid electrolyte to fracture the bottom frangible end and to express the electrolyte to operating cell space surrounding the electrolyte cylinder and the actuating spring.

3,669,754

PROCESS OF MAKING A MOLDED NEGATIVE ELECTRODE

Robert E. Ralston, Spring Valley, and Yung Ling Ko, Tarrytown, N.Y., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.

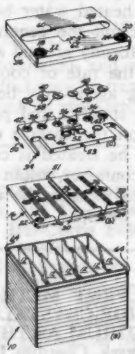
Filed June 13, 1969, Ser. No. 832,899
Int. Cl. H01m *13/08*
U.S. Cl. 136—126 **3 Claims**


FABRICATION OF MOLDED NEGATIVE ELECTRODE
CONDUCTOR
BLEND ZINC WITH GLYCERINE OR OTHER MATERIAL
ELECTROPLATED WITH ZINC
ADD CHLORIDE OF MERCURY AND BLEND
AMALGAMATE
ADD CHLORIDE OF AMMONIA AND BLEND
COMPACT ANODE MATERIAL AROUND CONDUCTOR IN MOLD
INTRODUCE AMMONIUM CHLORIDE SOLUTION
EJECT GREEN ANODE FROM MOLD AND PLACE IN AMMONIUM CHLORIDE SOLUTION TO COMPLETE BONDING REACTION
WASH CHLORIDE FREE AND MOLDED ANODE IS DRIED

A base or support of conducting metal provided with a zinc surface, alloyed or electroplated, is amalgam alloyed with mercury, and has bonded to said amalgam a porous body of zinc particles individually amalgam covered with

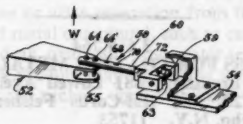
mercury and bonded to each by mutual common layers of amalgam, and said mercury amalgam serving also to bond the porous body to said conducting base.

3,669,755
BATTERY CLOSURE DEVICE
Donald W. Hughes, Jr., 3908 S. Rambla Orienta, Malibu, Calif. 90265
Filed Nov. 9, 1970, Ser. No. 88,049
Int. Cl. H01m *1/06*
U.S. Cl. 136—170 10 Claims



This invention relates to apparatus for simultaneously opening or closing all of the cell openings of a multi-cell storage battery. The closure device takes the form of a slider unit that may occupy either of two positions; one of the positions exposing all of the cell openings for servicing, and the other of said positions sealing all of the cell openings, except for venting purposes.

3,669,756
VEHICLE COUPLING WEIGHING DEVICE
Richard S. Bradley, Fairmont, Minn., assignor to Art's-Way Manufacturing Company Incorporated, Armstrong, Iowa
Original application July 2, 1969, Ser. No. 838,438. Divided and this application Oct. 29, 1971, Ser. No. 193,929
Int. Cl. G01g *19/08*
U.S. Cl. 177—136 12 Claims



An electromechanical weight-measuring system for weighing successive and cumulative loads deposited in a load-receiving medium employs a plurality of elastic deformable elements supporting the receiving medium at a plurality of predetermined load points. The elastic deformable elements are each positioned intermediately of a load point and a related ground-engaging supporting unit and each has affixed thereto an electrical strain gage medium interconnected in a circuit for amplifying and indicating changes in the weight imposed upon the receiving medium. The invention of this divisional application employs, in addition to a plurality of ground-engaging support means interconnected by the elastic elements with the receiving medium, a second ground-engaging supporting unit having an above ground support connection element together with a weight-responsive coupling device interconnecting said last-mentioned support connection element with one of the crucial load points of the receiving medium, said coupling device comprising a substantially horizontal, elastic weight-bendable member having one of its end portions connected to said last-mentioned support connection element and having another end connected and affixed to partially support said receiving medium. One of said connections of said deformable coupling elements is mounted for oscillation on a substantially horizontal axis extending longitudinally thereof. Electrical strain gage means is mounted on said deformable elastic member and is interconnected with the electrical circuitry of the strain gages of said other units to interpose as a factor in measurement of overall load weight that proportion of weight superimposed on said coupling.

3,669,757
METHOD OF MAKING AND USING DICED SINGLE CRYSTAL IMPURITY SOURCE
Morris Kaufmann, Los Angeles, Calif., and Bernard R. Shultz, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 23, 1970, Ser. No. 21,798
Int. Cl. B01j *17/36*
U.S. Cl. 148—1.6 8 Claims

A method for producing homogenous dilute dopant material for use in growing semiconductor device crystals of desired resistivity from a melt which includes the dilute dopant material. The method comprises providing the dilute dopant material in single crystal alloy form, measuring the resistivity of the crystal along its length, cutting a portion of the crystal having resistivities within a desired range, slicing said portion, polishing, dicing and cleaning the slices, and weighing out the required amount of diced dopant material as needed for the growth of a semiconductor device crystal of desired resistivity from a melt which includes the diced dopant material.

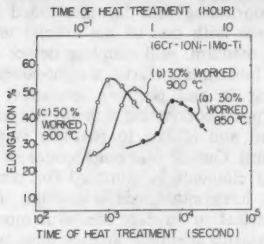
3,669,758
PROCESS FOR REMOVING CONTAMINANTS FROM ZIRCONIUM SURFACES
Charles R. Konecny, San Jose, Calif., assignor to General Electric Company
No Drawing. Filed Mar. 20, 1968, Ser. No. 714,441
Int. Cl. C23c *3/00*; C23f *5/02*
U.S. Cl. 148—6.14 12 Claims

A process for removing residual contaminants, such as fluorides remaining after acid etching, from zirconium alloy surfaces. This process is especially useful in the fabrication of fuel rods for nuclear reactors in which fuel material is encased in zirconium alloy tubes. In a preferred embodiment, the surface is treated with sodium hydroxide at elevated temperature, rinsed with water and, if desired, preoxidized.

3,669,759
THERMOMECHANICAL TREATMENT FOR IMPROVING DUCTILITY OF CARBIDE-STABILIZED AUSTENITE STAINLESS STEEL
Tatsuo Kondo and Hajime Nakajima, Takai-Mura, and Ryukichi Nagasaki, Mito-shi, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan
Filed Sept. 24, 1969, Ser. No. 860,683
Claims priority, application Japan, Sept. 27, 1968, 43/69,496
Int. Cl. C21d *1/00*
U.S. Cl. 148—12.3 11 Claims

An austenite stainless steel having superior ductility at high temperatures is obtained by subjecting the carbide-

stabilized austenite stainless steel to solution heat treatment, cold-working said steel more than 15%, and an-


TIME OF HEAT TREATMENT (HOUR)
(16Cr-10Ni-1Mo-Ti
(b) 30% WORKED 900 °C
(a) 30% WORKED 850 °C
(c) 50 % WORKED 900 °C
ELONGATION %
TIME OF HEAT TREATMENT (SECOND)

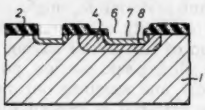
nealing it at a temperature between 850° C. and 950° C. for less than four hours.

3,669,760

METHODS OF PRODUCING DIFFUSION REGIONS IN SEMICONDUCTOR BODIES

Hans-Martin Rein, Heilbronn-Bockingen, and Peter Conze, Massenbach, Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Oct. 19, 1970, Ser. No. 81,692
Claims priority, application Germany, Oct. 18, 1969, P 19 52 632.0
Int. Cl. H01l 7/54
U.S. Cl. 148—1.5 **5 Claims**



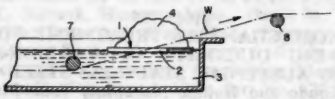
A method of producing a diffusion region in a semiconductor body in which the semiconductor body is covered with an insulating layer, a diffusion window in the insulating layer and a recess in the semiconductor are produced in one operation by ion bombardment and a diffusion region is diffused into the semiconductor body through a wall of the recess.

3,669,761

PATENTING OF STEEL WIRES WITH LEAD

Kurt-Jurgen Schulze and Joachim Jung, Oberbruch, Germany, assignors to Glanzstoff AG, Wuppertal, Germany

Filed July 8, 1970, Ser. No. 53,115
Claims priority, application Germany, July 19, 1969, P 19 36 909.6
Int. Cl. C21d 9/64, 1/56
U.S. Cl. 148—15 **5 Claims**



Apparatus and method for substantially reducing the entrainment of lead in the patenting of steel wires using a molten lead bath wherein a thin slotted plate is floated on the surface of the bath with the emerging wires passing through the slots thereof and a layer of a granulated amorphous carbon is deposited on top of the plate to cover said slots.

3,669,762

METHOD FOR HEAT-TREATING OF HOT ROLLED RODS

Keinosuke Takeo, Suita, Kazuo Kosugi, Ikeda, and Tadaoki Kamise, Amagasaki, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sept. 18, 1969, Ser. No. 859,122
Int. Cl. C21d 9/52, 9/64, 1/60
U.S. Cl. 148—18 **9 Claims**

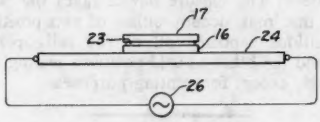
Heat treatment of hot rolled wire rod to provide a microstructure of improved ductility and cold working properties to permit the rod to be drawn without further heat treatment by immersing the wire rod, while the hot rolled rod is at a temperature level above the temperature at which allotropic transformation of the austenite commences, into a heated water bath of sufficient temperature level to permit the generation of a steam envelope and film uniformly around and on the surface of the rod to control the rate of cooling of the wire rod. A surface activating agent may be added to the water bath to control the stability and period of maintenance of the steam film on the surface of the wire rod. The heated wire rod to be treated is continuously fed by a coiler down into a container within which the water bath is disposed, the coiler causing the wire rod to form into a concentric coiled bundle.

3,669,763

TRAVELING SOLVENT METHOD OF GROWING SILICON CARBIDE CRYSTALS AND JUNCTIONS UTILIZING YTTRIUM AS THE SOLVENT

Ronald J. Perusek, Chardon, Ohio, assignor to General Electric Company

Filed Sept. 22, 1970, Ser. No. 74,265
Int. Cl. H01l 7/42; B01j 17/02, 17/20
U.S. Cl. 148—171 **7 Claims**



A "sandwich" is formed, comprising a layer of yttrium metal positioned between and in contact with two wafers of silicon carbide. The sandwich is heated, preferably in a specific sequence of temperature and time, so that one of the wafers is hotter than the other and the yttrium melts, whereby silicon carbide at the hotter interface dissolves in the yttrium, and this solvent zone travels through the hotter wafer and causes growth of a silicon carbide crystal on the cooler wafer. By using p-type and n-type wafers together and by introducing certain impurities into the yttrium, an abrupt p-n junction can be formed.

3,669,764

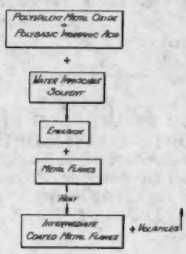
PROCESS FOR COATING METAL FLAKES

Carleton R. Bradshaw, 681 Lowell Ave., Central Islip, N.Y. 11722, and Hal-Curtis Felsher, 144 Bounty Lane, Jericho, N.Y. 11753

Division of application Ser. No. 832,543, May 12, 1969, which is a continuation-in-part of application Ser. No. 633,341, Mar. 29, 1967, which is a continuation-in-part of application Ser. No. 532,493, Jan. 25, 1966, which in turn is a continuation-in-part of application Ser. No. 133,324, Aug. 23, 1961. This application Aug. 3, 1970, Ser. No. 67,646
Int. Cl. C23f 7/08
U.S. Cl. 148—6.15 R **21 Claims**

Metal flakes, particularly flakes of copper or copper alloys, are admixed with water-in-oil emulsions wherein the aqueous phase is a solution of a polyvalent metal acid phosphate salt such as zinc and/or aluminum acid phosphate, and the emulsion is evaporated off to provide the flakes with an oxidation resistant metal acid phosphate

coating. On treatment of the coated flakes, either in the original admixture or after separation from the emulsion, with a polyvalent metal compound, such as calcium oxide,



there is produced an oxidation- and water-resistant coating. The resulting product may be treated with additional stabilizing materials, such as vinyl stabilizers or chelating agents.

3,669,765

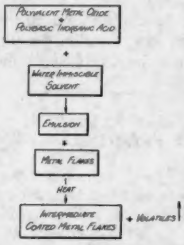
PROCESS FOR COATING METAL FLAKES

Carleton R. Bradshaw, 681 Lowell Ave., Central Islip, N.Y. 11722, and Hal-Curtis Felsher, 114 Bounty Lane, Jericho, N.Y. 11753

Continuation-in-part of application Ser. No. 633,341, Mar. 29, 1967, which is a continuation-in-part of application Ser. No. 532,493, Jan. 25, 1966, which in turn is a continuation-in-part of application Ser. No. 133,324, Aug. 23, 1961. This application May 12, 1969, Ser. No. 832,543

Int. Cl. C23f *7/08*

U.S. Cl. 148—6.16 **6 Claims**



Metal flakes, particularly flakes of copper or copper alloys, are admixed with water-in-oil emulsions wherein the aqueous phase is a solution of a polyvalent metal acid phosphate salt such as zinc and/or aluminum acid phosphate, and the emulsion is evaporated off to provide the flakes with an oxidation resistant metal acid phosphate coating. On treatment of the coated flakes, either in the original admixture or after separation from the emulsion, with a polyvalent metal compound, such as calcium oxide, there is produced an oxidation- and water-resistant coating. The resulting product may be treated with additional stabilizing materials, such as vinyl stabilizers or chelating agents.

3,669,766

FORMATION OF COATING ON COPPER CONTAINING MATERIALS

Mitsunosuke Fukawa, 20–21, 1-chome, Matsugaoka, Kugenuma, Fujisawa-shi, Kanagawa-ken, Japan; and Haruo Oishi, 21–7, 5-chome, Nakano-ku; Kichitaro Saruya, 7–14, 2-chome, Minami-cho, Tanashi-shi; and Akira Nagai, 17, 2-chome, Fukuro-machi, Kita-ku, all of Tokyo, Japan; and Yoshitaro Nagai, 13–3, 1-chome, Nishikamata, Ota-ku, Japan

No Drawing. Filed Nov. 28, 1969, Ser. No. 880,929

Int. Cl. C23f *7/00*

U.S. Cl. 148—6.24 **1 Claim**

A method of industrially forming verdigris on a surface of an article of copper or an alloy thereof within a short period, which resembles that naturally formed, so as to prevent the surface from corrosion and to give a decorative and artistic appearance, by treating such a surface with a solution containing ammonium sulphate and mercuric chloride or further treating with an ethyl nitrate solution.

3,669,767

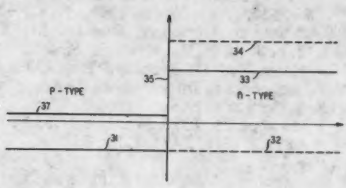
DOPING PROFILE FOR GaP DIODES IMPROVED ELECTROLUMINESCENT EFFICIENCY

William H. Hackett, Jr., and Donald L. Scharfetter, Morristown, and Lawrence J. Varnerin, Jr., Watchung, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Aug. 21, 1969, Ser. No. 851,987

Int. Cl. H01l *7/46*; H05b *33/00*

U.S. Cl. 148—171 **2 Claims**



The diffusion of relatively mobile acceptor dopant atoms away from the epitaxially-grown p-n junction of a gallium phosphide electroluminescent device during the epitaxial growth process causes the degradation of electroluminescent efficiency. This diffusion can be prevented by the inclusion of the mobile acceptor dopant as a minor dopant in the n-region in essentially the same concentration as is present as the major dopant in the p-region.

3,669,768

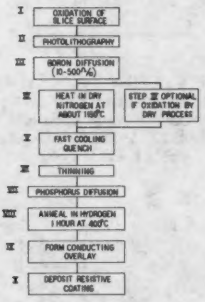
FABRICATION PROCESS FOR LIGHT SENSITIVE SILICON DIODE ARRAY TARGET

William E. Beadle, Sinking Spring, Kenneth E. Benson, Allentown, James R. Mathews, Reading, and Louis H. Von Ohlsen, Jr., Greensfields, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Dec. 4, 1969, Ser. No. 882,235

Int. Cl. H01l *7/44*

U.S. Cl. 148—187 **2 Claims**



In the fabrication of silicon diode array targets for video camera tubes the initial PN junction diode diffusion heat treatments using a boron source, produces a P type sheet resistance in the range of 10 to 500 ohms per square. Values below this range produce a boron rich glass which is difficult to remove without producing

defects. Values above this range do not produce sufficient boron rich glass to be effective in gettering certain impurities. This diffusion is followed by treatment at a temperature comparable to the diffusion temperature, for an appreciable period in a nitrogen atmosphere to minimize the occurrence of certain defects. The heat treatment of the semiconductor slice may, alternatively, terminate with a rapid cooling or quenching step.

Following the second impurity diffusion into the light sensitive face of the target an annealing treatment is performed for about one hour at a relatively low temperature in a reducing atmosphere, typically hydrogen, to minimize dark current.

3,669,769

METHOD FOR MINIMIZING AUTODOPING IN EPITAXIAL DEPOSITION

Angelo V. Badami, Wappingers Falls, N.Y., Ekkehard Ebert, Sindelfingen, Germany, Bernard M. Kemlage, Hopewell Junction, N.Y., Karl E. Kroell, Stuttgart-Rohr, Germany, and H. Bernhard Pogge, La Grangeville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 29, 1970, Ser. No. 76,399
Int. Cl. H01l *7/36;* **C23c** *13/00*
U.S. Cl. 148—175 **8 Claims**

Autodoping is minimized during the growth of an epitaxial layer on a semiconductor substrate by using a gaseous reaction mixture that deposits the initial capping layer at a relatively slow deposition rate. The reaction mixture contains a relatively minor portion of a semiconductor compound along with the carrier gas. Subsequently, a second gaseous reaction mixture containing a greater portion of a compound of a semiconductor material is used to complete the deposition of the epitaxial layer. This is done merely to reduce the total growth cycle.

3,669,770

METHOD OF MAKING ABRASION-RESISTANT METAL-COATED GLASS PHOTOMASKS

Nathan Feldstein, Kendall Park, N.J., assignor to RCA Corporation

No Drawing. Filed Feb. 8, 1971, Ser. No. 113,767
Int. Cl. C23f *17/00;* **H05k** *3/06*
U.S. Cl. 156—3 **2 Claims**

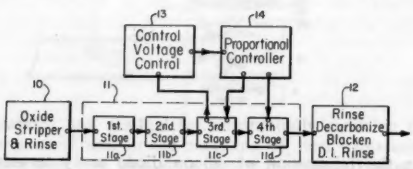
Method of making a large-area metal-coated glass article of the type which must resist abrasion, comprising forming a relatively thick pattern of metal on a transparent glass substrate by an electroless deposition of nickel-phosphorus on the substrate and hardening the nickel-phosphorus layer by heat treatment at temperatures not higher than about 250° C.

3,669,771

PROCESS OF ETCHING A SHADOW MASK

Martin L. Lerner, River Forest, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Jan. 28, 1970, Ser. No. 6,619
Int. Cl. C23f *1/02*
U.S. Cl. 156—8 **9 Claims**



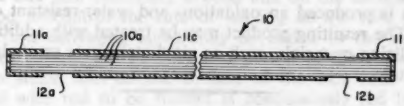
A shadow mask for a color television tube, having a pattern of apertures dimensioned as required for screening, is further etched after the screening process to attain a hole size larger than the phosphor deposits of the screen. The re-etching occurs in several stages and a densitometer associated with one such stage measures the hole size and derives a voltage used to control the etching time so that the apertures of the re-etched mask are precisely controlled to a desired size.

3,669,772

METHOD FOR PRODUCING FLEXIBLE IMAGE TRANSPORTING FIBER OPTIC CONDUIT

Richard R. Strack, Sturbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed July 2, 1970, Ser. No. 51,977
Int. Cl. C03c *15/00;* **G02b** *5/16*
U.S. Cl. 156—15 **7 Claims**



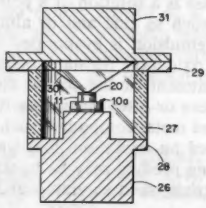
A process for essentially completely eliminating acid soluble cladding from an optical fiber bundle. An acid soluble clad coherent optical fiber bundle is coated with an acid resistant coating except for an area adjacent each end, and the resulting exposed areas are acid leached to remove all the acid soluble glass therefrom, leaving a flexible area adjacent each end. The fibers in these areas are fused together holding the fibers in coherency. The ends of the bundle are removed from about the middle of the fused sections, and the acid resistant coating removed. The acid leachable cladding is then leached from the remainder of the bundle, leaving a flexible, image transporting bundle having fused coherent opposite ends.

3,669,773

METHOD OF PRODUCING SEMICONDUCTOR DEVICES

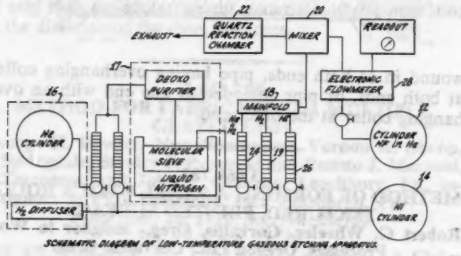
Clifford A. Levi, Billerica, Mass., assignor to Alpha Industries, Inc., Newton, Mass.

Filed Feb. 24, 1970, Ser. No. 13,710
Int. Cl. H01l *5/00*
U.S. Cl. 156—17 **7 Claims**



In manufacturing silicon mesa diodes, the method of forming metal contacts on the upper surfaces of the mesas by applying a layer of conductive material over the entire surface of the wafer including the upper surfaces of the mesas and the silicon oxide coating on the remainder of the wafer. The wafer is positioned with the mesas downward and placed in contact with a thin layer of an uncured epoxy resin so as to cause resin to adhere only on the conductive material overlying the upper surfaces of the mesas. After curing the resin, the wafer is subjected to an etching solution to dissolve the conductive material except the contacts to the upper surfaces of the mesas which are protected by the cured epoxy resin.

3,669,774
LOW TEMPERATURE SILICON ETCH
John Pickett Dismukes, Princeton, N.J., assignor to RCA Corporation
Filed Nov. 20, 1969, Ser. No. 878,320
Int. Cl. H01l 7/50, 7/54
U.S. Cl. 156—17 3 Claims



SCHEMATIC DIAGRAM OF LOW-TEMPERATURE GASEOUS ETCHING APPARATUS

A mechanically polished silicon wafer is etched to remove surface damaged material and give a smooth surface by etching at a temperature of from about 800 to 1050° C. in a gas mixture consisting of a carrier gas of H_2, He or a mixture thereof, a small concentration of a gas reactive with SiO_2 such as HF, ClF_3 or BrF_5 and a small concentration of a gas reactive silicon such as HBr, HI, HCl, Cl_2, Br_2, or I_2.

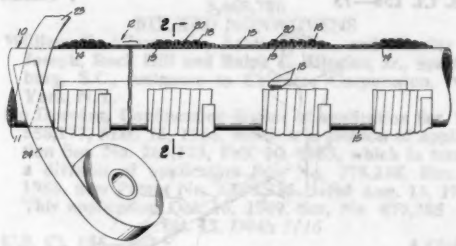
3,669,775
REMOVAL OF BORON AND PHOSPHOROUS-CONTAINING GLASSES FROM SILICON SURFACES
Roy A. Porter, Whitehall, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.
No Drawing. Filed Dec. 29, 1969, Ser. No. 888,827
Int. Cl. H01l 7/50
U.S. Cl. 156—17 10 Claims

Boron and phosphorous-doped glasses which are formed on silicon surfaces during electronic device manufacture may be chemically removed by a method including the steps of treatment with a solution of a suitable chelating agent having a pH of at least 9.0 at room temperature and a temperature of at least 85° C., followed by treatment with an oxidizing agent, followed by repeated treatment with the chelating agent solution.

3,669,776
NOVEL NICKEL ETCH PROCESS
Frederick Walter Eppensteiner, Southfield, Mich., assignor to M & T Chemicals Inc., New York, N.Y.
No Drawing. Filed Mar. 26, 1969, Ser. No. 810,824
Int. Cl. C23g 1/15
U.S. Cl. 156—18 13 Claims

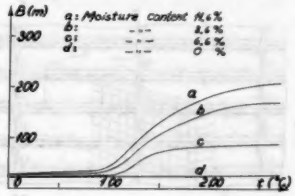
A method is provided for imparting decorative, light diffusing and/or non-reflective etching to nickel surfaces which includes immersing objects having clean nickel surfaces in a solution having a pH within the range of 9–12 and containing a nickel oxidant, ethylenediamine and a source of sulfate ion, for a period of time sufficient to form crystals on the nickel surfaces, withdrawing the objects with the crystal formation thereon from the solution, removing any remaining solution from the nickel surfaces, and immersing the objects in a crystal solvent to dissolve the crystals, and removing the objects with the etched nickel surfaces thereon, the pattern of the etching being substantially the same as the original crystal formation thereon. Further, solutions are provided for imparting the decorative, light diffusing and/or non-reflective etch and objects having disposed thereon decorative, light diffusing and/or non-reflective etched nickel surfaces.

3,669,777
METHOD OF PROTECTING METAL-CLAD CABLES FROM ATTACK BY STRAY CURRENTS
George W. Gillemot, Venice, Calif., assignor to Walter A. Plummer, Sherman Oaks, Calif.
Filed June 23, 1969, Ser. No. 835,366
Int. Cl. H01b 13/26
U.S. Cl. 156—54 5 Claims



A method of maintaining a sheathed cable in service by providing it with a protective enclosure of insulating material effective to isolate the cable from attack by stray currents while safeguarding the cable from loss of its pressurizing gas charge.

3,669,778
METHOD FOR THE PRODUCTION OF FIBROUS SHEET MATERIALS
Torben Borup Rasmussen, Abyhoj, Denmark, assignor to Karl Kristian Kobs Kroyer, Aarhus-Viby, Denmark
Filed Feb. 3, 1970, Ser. No. 8,180
Claims priority, application Great Britain, Feb. 4, 1969, 5,943/69
Int. Cl. B29j 5/04
U.S. Cl. 156—62.2 4 Claims



In the production of fibrous sheet materials by an air-laying process adjusting the moisture content of the fibrous layer at a value of at least 6% by weight and embossing said fibrous layer at a temperature of above 100° C.

3,669,779
PRODUCTION OF PILE FABRICS
David E. Gordon, La Grange, Ga., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed Dec. 30, 1970, Ser. No. 102,809
Int. Cl. D05c 15/00; B32b 5/00
U.S. Cl. 156—72 3 Claims

Method of back-coating pile carpet containing pile yarns bound by embedment in a relatively impervious polymer layer comprising the steps of perforating the impervious layer to permit passage of gases therethrough, and applying a heat bondable polymeric back-coating to the perforated carpet.

3,669,780

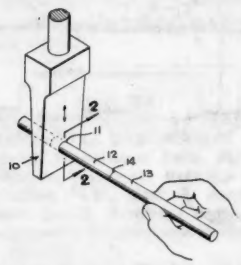
METHOD FOR REMOTELY SEALING PLASTICS USING ULTRASONIC ENERGY

Howard Deans, Secane, and Thomas B. Sager, Plymouth Valley, Pa., assignors to Ultrasonic Systems, Inc., Farmingdale, N.Y.

Continuation-in-part of application Ser. No. 540,335, Apr. 5, 1966. This application Aug. 1, 1969, Ser. No. 866,047

Int. Cl. B29c *27/08*; B32b *31/16*

U.S. Cl. 156—73 7 Claims



A method and means for remotely sealing plastics wherein an undriven member of two members is clamped or held in relation to a member being ultrasonically energized, and whereby fusion of plastic joints takes place, the tool not being in contact with the joints.

3,669,781

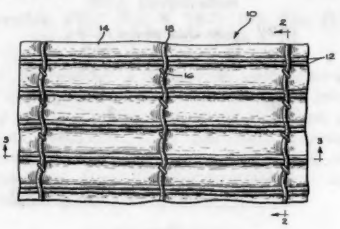
METHOD OF MAKING FABRIC WITH A FILLER OF GREATER AREA THAN THE FABRIC

Charles A. Lee and Warren E. Furbeck, Knoxville, Tenn., assignors to Appleton Wire Works Corporation, Appleton, Wis.

Original application Apr. 29, 1966, Ser. No. 546,460, now Patent No. 3,559,810. Divided and this application Mar. 30, 1970, Ser. No. 29,324

Int. Cl. B32b *31/26*

U.S. Cl. 156—84 7 Claims



A puckered fabric is formed by stretching a plurality of rack filaments lying in parallel relationship with one another, depositing a stabilized non-woven web of filler material, sewing or stitching cross filaments over said filler and to the rack filaments and then shrinking the rack or cross filaments in at least one direction.

3,669,782

METHOD FOR COMPENSATING FOR RESIN SHRINKAGE IN THE PRODUCTION OF A FILAMENT WOUND ARTICLE

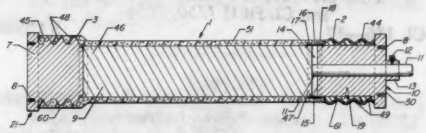
Jack Lowrie McLarty, Milwaukee, Wis., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed May 25, 1970, Ser. No. 40,180

Int. Cl. B32b *1/08*

U.S. Cl. 156—84 8 Claims

An improved method of producing a filament wound article utilizing a mandrel of unique construction. This invention is useful in producing filament wound articles on mandrels having opposing winding surfaces having components normal to the axis of the mandrel. Such articles include pressure vessels, pipe having threads



wound in at both ends, pipe having overhanging collars at both ends, or pipe threaded at one end with an overhanging collar at the other end.

3,669,783

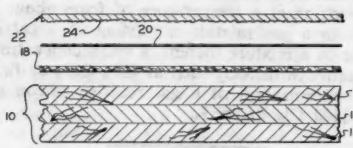
METHOD OF FORMING A PANEL WITH A ROUGH TEXTURED, PRINTED SURFACE

Robert G. Wheeler, Corvallis, Oreg., assignor to Wood Processes, Oregon Ltd., Corvallis, Oreg.

Filed Nov. 13, 1969, Ser. No. 876,486

Int. Cl. B32b *33/00*

U.S. Cl. 156—90 12 Claims



A preformed panel is provided with a textured, printed surface by first adhering a spongy compressible fiber web, having a substantially uniform thickness and a high moisture content, to a surface of said panel. A decorative pattern sheet is then secured over the web, and the resultant assembly is compressed by means of a textured metal surface caul plate having its textured surface disposed adjacent the decorative pattern sheet. The assembly is maintained under heat and pressure conditions for a sufficient time for substantially drying the web and producing bonding of the assembly, which retains the impression of the caul plate.

3,669,784

PROCESS FOR PREPARING A SOFT AND TENACIOUS NONWOVEN FABRIC

Tadashi Yokota, Kyoto, and Taizo Asai, Otsu, Japan, assignors to Nippon Cloth Industry Co., Ltd., Ukyo-ku, Kyoto, Japan

No Drawing. Filed Jan. 30, 1970, Ser. No. 8,097

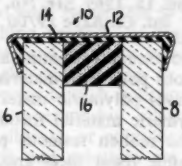
Int. Cl. B32b *35/00*

U.S. Cl. 156—148 15 Claims

A process for preparing a nonwoven fabric comprising forming a uniform mat of fibers from ½ to 5 inches in length and from 0.5 to 10 in denier, needle-punching said mat from 600 to 6000 times per square inch by means of a needle loom provided with felting needles of from number 30 to number 46 to thereby form a fiber sheet having a weight of at least 150 g./m.^{2} and an apparent density of at least 0.15, impregnating said sheet with a bonding agent liquid comprising an anionic latex of a high molecular weight elastic material, a nonionic surface active agent having a HLB of at least 11 and a cloud point of from 30 to 85° C., and, as an indispensable component, if there is no protecting effect of said surface active agent, an ionizable organic or inorganic metallic salt to coagulate said latex, wherein the content of said high molecular weight elastic material is at least 10% by weight of the total weight of said bonding agent liquid, wherein the content of said nonionic surface active agent is from 5 to 30 parts by weight, per 100 parts by weight

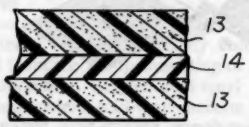
of said high molecular weight elastic material, and wherein the amount of said metallic salt is sufficient to coagulate said high molecular weight material, so as to deposit from 20 to 50 parts by weight of said high molecular weight material per 100 parts by weight of fiber component; elevating the temperature of said impregnated bonding agent liquid to a temperature above its coagulation temperature to thereby coagulate substantially all of said high molecular weight material without migration in the direction of the sheet thickness.

3,669,785
METHOD FOR FABRICATING A MULTIPLE GLAZED UNIT
George H. Bowser, New Kensington, Vernon A. Shoop, Springdale, Stanley J. Pyzewski and Renato J. Mazzoni, Tarentum, and John P. Bologna, Leechburg, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Mar. 26, 1970, Ser. No. 22,762
Int. Cl. C03c *27/10*
U.S. Cl. 156—109 **1 Claim**



A method for fabricating multiple glazed units from a composite element composed of an elongated strip of mastic sealant material having a flexible carrier tape adhered to one surface and a resilient spacer-dehydrator element adhered to the opposite surface. The composite element, described above, is assembled and suitably packaged for use, shipment or storage. Thereafter, a segment of said element is removed from the package, inserted between opposed, marginal edge portions of a pair of spaced glass sheets and sealed by said mastic to produce a finished unit.

3,669,786
METHOD OF LAMINATING PLASTIC FOAM
Francis C. Moore, 3935 Arthington Blvd., Indianapolis, Ind. 46226
Continuation-in-part of application Ser. No. 583,469, Sept. 30, 1966. This application Feb. 19, 1970, Ser. No. 12,708
Int. Cl. B29c *17/03*
U.S. Cl. 156—163 **11 Claims**



Laminating a plastic foam to a surface-treated polyolefin film by heating the film to a temperature approximating or slightly exceeding its disorientation temperature and thereafter contacting the film and foam.

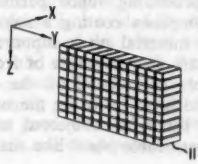
3,669,787
FLEXIBLE DEFORMABLE SELF-SUPPORTING GLASS FRIT SEALING TAPE
Lew Wallace Cornell, Mound Village, Minn., assignor to Minnesota Mining and Manufacturing Company
Filed Aug. 8, 1968, Ser. No. 751,088
Int. Cl. C09j *7/02*
U.S. Cl. 161—167 **4 Claims**

Sheet material formed from glass frit bonded with a minor amount of heat-depolymerizable rubbery polymer, preferably coated on one or both surfaces with a small amount of similarly depolymerizable pressure-sensitive adhesive, can be used to join glass or other inorganic substrates. When subjected to heat, the rubber depolymerizes and volatilizes and the frit thereafter fuses, resulting in a strong nonporous inorganic seal. One use for the product is in the formation of color TV picture tubes.

3,669,788
BULKED NONWOVENS
William T. Allman, Jr., Ashland, Va., and Charles W. Joseph, Rock Hill and Ralph G. Higgins, Jr., Spartanburg, S.C., assignors to Celanese Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 558,177, Mar. 15, 1966, which is a division of application Ser. No. 266,123, Feb. 20, 1963, which in turn is a division of application Ser. No. 778,248, Dec. 4, 1958, now Patent No. 3,100,328, dated Aug. 13, 1963. This application Oct. 10, 1969, Ser. No. 870,385
Int. Cl. D04h *3/16*
U.S. Cl. 156—167 **4 Claims**

A process which comprises extruding a solution of a lower alkanoic acid ester of cellulose to form filaments, moving the filaments about while in a mutually adhesive condition to cause them to become randomly directed and bonded to one another at spaced points, collecting them in a form of a bonded non-woven web and contacting the non-woven web with steam to thereby improve the physical properties of the web, i.e., covering power, resilience, insulation, strength, density and hand.

3,669,789
METHOD OF MAKING PLASTIC FIBER-OPTICAL PLATES
Mikio Utsugi and Takahiro Ohta, Minami-ashigara-machi, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara-machi, Kanagawa, Japan
Filed Mar. 23, 1970, Ser. No. 21,741
Claims priority, application Japan, Mar. 22, 1969, 44/21,779
Int. Cl. B29d *11/00*; B32b *31/00*
U.S. Cl. 156—182 **1 Claim**



A method of making plastic fiber-optical plates by laminating a number of transparent plastic sheets using layers of an adhesive having a low refractive index, slicing the resulting laminated block to form thin sheets and laminating the thin sheets using layers of an adhesive having a low Refractive Index is disclosed.

3,669,790
PROCESS FOR MAKING NON-WOVEN FABRICS
Hollis H. Bascom and John J. Greci, Livermore, Calif., assignors to Orcon Corporation, Livermore, Calif.
Filed Oct. 31, 1966, Ser. No. 590,910
Int. Cl. B31c *13/00*
U.S. Cl. 156—162 **14 Claims**

1. A method of making non-woven fabrics of the kind in which longitudinally extending warp strands are bonded to transversely extending fill strands, said method comprising,

guiding a plurality of warp strands longitudinally over a support,

winding a fill strand about the warp strands and the support to pull the fill strand into engagement under tension with the warp strands supported by the support while applying a binder to bond the warp and fill strands together and thereby make a non-woven fabric,

interposing a conveyor belt between the support and the fabric formed by the bonded warp and fill strands,

and transporting the non-woven fabric along the support by positive drive of the belt and frictional contact of the fabric on the belt to eliminate fabric distortion resulting from direct drive of the fabric.

3,669,791

GAS RELEASE FROM CELLULOSE CASING BY MULTIPLE PERFORATIONS

Douglas J. Bridgeford, Champaign, Ill., assignor to Tee-Pak, Inc., Chicago, Ill.

Original application Dec. 13, 1967, Ser. No. 690,161. Divided and this application Dec. 11, 1970, Ser. No. 97,215

Int. Cl. B29c *19/00*

U.S. Cl. 156—244 **7 Claims**

A method of venting fluids from antificial tubular casings made by the viscose process comprises perforating multiple small holes in a discrete area of the cellulose xanthate casing during regeneration thereof. The holes are subsequently patched by application of a solid film patch, such as regenertaed cellulose film, onto the gel casing with a water-activated adhesive, such as alpha-cyanomethyl acrylate monomer.

3,669,792

PROCESS FOR PRODUCTION OF VAPOR PERMEABLE SHEET-LIKE MATERIALS

Konosuke Mitsukawa and Hiroshi Hattori, Shiga, Toyohiko Hikoda, Kyoto, and Yoshinori Masubuchi, Shiga, Japan, assignors to Toyo Rayon Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Oct. 14, 1968, Ser. No. 767,475

Claims priority, application Japan, Oct. 13, 1967, 42/65,611

Int. Cl. B32b *7/04*; B44d *1/44*

U.S. Cl. 156—249 **11 Claims**

A process for producing vapor permeable sheet-like materials which comprises coating a solution of a film-forming polymeric material on a support material, and applying a gas stream at a flow rate of from 1 meter per second to 50 meters per second on the coated surface, until a dense gelated layer forms on the surface when the coated material is thereafter subjected to a coagulating step. The vapor permeable sheet-like material is finally coagulated.

3,669,793

CONTINUOUS TRANSFER PROCESS FOR COATING RIGID ELONGATE WORK

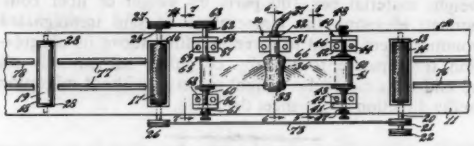
Raymond T. Billings, 318 Mount Pleasant Ave., Ambler, Pa. 19002

Continuation of application Ser. No. 740,011, Apr. 22, 1968, which is a division of application Ser. No. 280,035, May 13, 1963. This application May 7, 1970, Ser. No. 37,386

Int. Cl. B44c *1/16*

U.S. Cl. 156—238 **7 Claims**

This invention pertains to a method for coating relatively rigid elongate work and comprises the steps of feeding a film containing a heat releasable coating material from a feed roll through a coating station while drivingly advancing a relatively rigid elongate workpiece along a flat surface through the coating station where the heat releasable coating material is supplied to the work by heating and pressing a roller having a resiliently yieldable heat conducting external surface against the film and the workpiece. The film from which the heat releasable coating has been removed is thereupon taken up upon a roller. The steps of feeding, coating, advancing and removing are all synchronized to provide a continuous operation.



3,669,794

EXTRUSION COATING OF A HEAT FUSIBLE FOAM SHEET

Conrad F. Mazur, Chippewa Falls, Wis., assignor to Standard Oil Company, Chicago, Ill.

Filed Jan. 15, 1969, Ser. No. 791,393

Int. Cl. B29c *19/00*

U.S. Cl. 156—244 **15 Claims**

A process for continuously coating a polystyrene foam sheet with a resinous polymeric material comprising: (1) melting said resinous polymeric material, (2) extruding said resinous polymeric material through a flat film die, (3) contacting the molten resinous polymeric material with the heat fusible foam sheet and, (4) compressing the sheet and resinous material to form a laminate product.

3,669,795

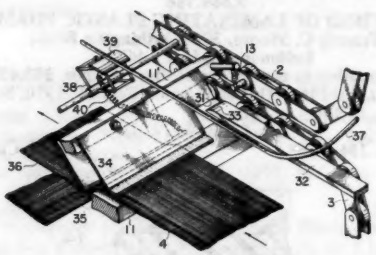
METHOD FOR MAKING A LAMINATED BODY OF PLIABLE THIN LAYER MATERIALS

Masahide Yazawa and Haruhisa Tani, Tokyo, Japan, assignors to Polymer Processing Research Institute Ltd., Tokyo, Japan

Filed Mar. 9, 1970, Ser. No. 17,577

Int. Cl. B32b *31/00, 31/10*; B65c *5/00*

U.S. Cl. 156—265 **7 Claims**



Method for making a laminated body of pliable thin layer materials obtained wholly or mainly from a uniaxially stretched film piled in lengthwise and crosswise directions which comprises at least one cycle of steps of

(1) supplying a pliable thin layer material obtained wholly or mainly from uniaxially stretched film continuously from the crosswise direction as a weft above another pliable thin layer material running continuously in the lengthwise direction as a warp,

(2) nipping the end of the weft by a pair of holders one from upward and the other from downward at the feeding side of the weft,

(3) moving the nipped weft by a distance substantially equal to the width of the warp in crosswise direction,

(4) cutting the weft into pieces one after another so as to make the length of each piece substantially equal to the width of the warp above the selvage of the warp at the feeding side,

(5) freeing the nipped end of the weft above the other selvage of the warp to allow the cut pieces to fall on the warp, one after another, intermittently to form a piled layer without leaving gaps between each successive weft.

3,669,796

ADHERING RESINS TO SUBSTRATES, ESPECIALLY METAL, BY RADIATION

Roger P. Hall, Mayfield Heights, and Ivor Pratt, Strongville, Ohio, and Richard A. Young, Buffalo Grove, Ill., assignors to SCM Corporation, New York, N.Y.

No Drawing. Filed Oct. 3, 1968, Ser. No. 764,959
Int. Cl. B29c 27/04
U.S. Cl. 156—272 16 Claims

A process for coating by radiation a substrate, and especially one having a metallic surface, with a substantially catalyst-free system containing a polymerizable organic unsaturated resin susceptible to free-radical catalysis; and the resulting product. In one form, a film of the resin is superimposed upon the substrate while a facing side of either the resinous film or substrate is contacted at any time prior to such radiation with an organic substituted, radiation-responsive silane, or derivative thereof such as a siloxane or polysiloxane of the silane. Thereafter, the film and substrate are subjected to the high energy radiation to adhere one to the other.

The process is also adapted for coating articles with normally air-inhibited, thermosetting resins by a two-step process, wherein the resin film is first passed through one treating zone effective to impart mass integrity and thereby define a sheet, and the sheet together with the silane and the substrate is then passed through another treating zone effective substantially to complete the cure of the resin and simultaneously adhere the sheet to the substrate, at least one of the treating zones comprising exposure to high energy radiation.

3,669,797

METHOD OF MANUFACTURING COMPOSITE BODIES OF METALS AND POLYOLEFINS

Yoshiaki Fukazawa, Yoshitaka Iwata, and Shigeharu Sakurai, Tokyo-to, Japan, assignors to Mitsubishi Kasei Kogyo Kabusbiki Kaisha, Tokyo-to, Japan

Filed July 1, 1969, Ser. No. 838,204
Claims priority, application Japan, July 6, 1968, 43/47,424; June 3, 1969, 44/43,362
Int. Cl. C09j 5/04
U.S. Cl. 156—316 13 Claims

In the manufacture of composite bodies of metals and polyolefins, a binder is used essentially consisting of a member selected from the group consisting of maleic acid-vinyl acetate copolymer, acrylic acid-vinyl acetate copolymer, esterified maleic acid-vinyl acetate copolymers and esterified maleic acid-styrene copolymers and the composite bodies are pressed at a temperature higher than the melting point of polyolefins.

3,669,798

PRESSURE SENSITIVE COHESION

James D. Brown and Carl A. Uraneck, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Nov. 18, 1970, Ser. No. 90,783
Int. Cl. C09j 5/00, 3/26
U.S. Cl. 156—334 16 Claims

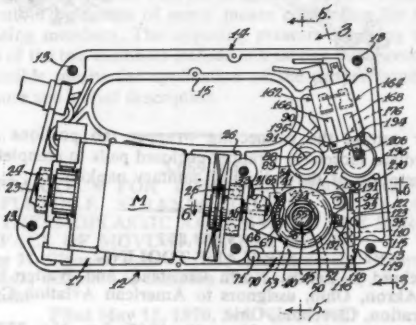
Surfaces are bonded together with an adhesive formulation which is an unsaturated polymer of a cyclic monoolefin and a tackifier, e.g., an ester of a partially hydrogenated rosin.

3,669,799

ELECTRICALLY CONTROLLED HAND TOOL FOR FRICTION-FUSING NON-METALLIC STRAP

Ilmar J. Vilcins, Northbrook, and Robert J. Frey, Mount Prospect, Ill., assignors to Signode Corporation

Filed June 16, 1970, Ser. No. 46,727
Int. Cl. B32b 31/20
U.S. Cl. 156—359 9 Claims



A tool for friction-fusing overlapping strap portions including an electric motor for oscillating a rocker member, with the rocker member being connected to an output member for initially intermittently rotating a strap gripping member in a first direction to withdraw one strap portion, and further including a lever for sensing tension in said one strap portion for converting the intermittent rotary motion of the output member into oscilalting movement, whereby one strap portion is moved relative to the other strap portion to effect interface melting therebetween. The shaft of the electric motor has an eccentric portion integral therewith and a sleeve is slidably mounted thereon and received within a cavity in the rocker member. The cavity in the rocker member is generally semicircularly shaped, and the sleeve has arcuate upper and lower portions that are seated within the cavity. A ratchet and pawl mechanism is provided for converting the intermittent rotary motion of the output member into oscillating movement, and actuation of the ratchet and pawl mechanism is controlled by the tension sensing lever which has a pawl latching portion formed integrally therewith that releases the pawl when a predetermined amount of tension is drawn in one strap portion.

3,669,800

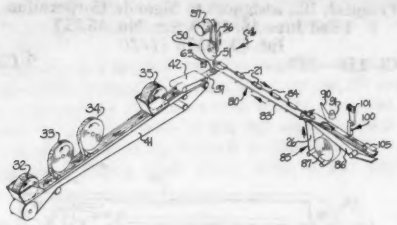
APPARATUS FOR FABRICATING SANITARY NAPKINS

Graves T. Gore, Ware Shoals, S.C., assignor to Riegel Textile Corporation, Ware Shoals, S.C.

Filed Feb. 5, 1970, Ser. No. 8,780
Int. Cl. B32b 31/06; A61f 13/18
U.S. Cl. 156—383 14 Claims

An apparatus for fabricating sanitary napkins having an elongate wrapper-enclosed pad and wrapper tabs extending longitudinally from opposed ends of the wrapper-enclosed pads including means for feeding a continuous web of pad material, means for cutting the pad material into individual pads, conveyor means for successively receiving, spacing and advancing the individual pads, means for feeding a continuous web of wrapper material and for successively receiving and positioning the pads on the wrapper material, means for folding opposite edge portions of the wrapper material in overlapping relation around the pads, means for applying adhesive between

the overlapping portions of the wrapper material for securing the edge portions to each other, and cutting means



for cutting the connecting wrapper tab portions intermediate successive wrapper-enclosed pads to complete the formation of the individual sanitary napkins.

3,669,801

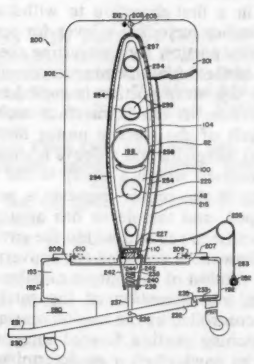
AIRPLANE TOOLING

Richard L. Jarvis, North Olmstead, and Walter Kully, Akron, Ohio, assignors to American Aviation Corporation, Cleveland, Ohio

Original application Nov. 20, 1968, Ser. No. 777,362. Divided and this application May 21, 1970, Ser. No. 48,607

Int. Cl. B32b *31/14*; B27d *3/00*

U.S. Cl. 156—383 **2 Claims**



Briefly, the invention relates to jigs for placing aircraft component parts in assembled relationship and providing the pressure to bond them into a stressed skin construction.

A generic concept to the invention is the use of selectively actuated pressure applying surfaces over the areas to be bonded while the parts are held in their proper relative locations.

One portion of the invention relates to the bonding of an upper aft fuselage section comprising flanged bulkhead sections and stringers and a stressed skin thereover in a single-stage jig having fluid expansible diaphragm over each of the areas to be joined, the fluid expansible diaphragms being in one half of a jig which is pinned together to hold each of the bulkhead stringer and skin components in proper relation while providing a reaction force upon the application of the bonding pressure by means of the introduction of pressure into the diaphragms.

A second portion of the invention relates to the construction of a skeleton of a wing having a main tubular spar and a trailing edge spar with flanged ribs of stamped metal, the jig including supports for the ribs and spars, individual resistance heating means for applying heat and pressure at each of the joints, of the wing skeleton. The second-stage jig for bonding the skin to the wing skeleton includes a means for tensioning the skin over the skeleton as well as fluid pressure expansible means to provide the bonding pressure in all areas where the skin is bonded to the ribs and spars. The ribs of the wings have flanges into which transitory reinforcing means closely fit to prevent deflection of the flanges under the bonding pressure applied thereto, a transitory reinforcing means being segmented such that they may be pulled out through cutouts in the ribs of the wings after the bonding operation is completed.

A further portion of the invention relates to bonding of a plurality of ribs and a torque tube of an aircraft control element in assembled relation by means of a liquid epoxy resin in a tube cradle and rib clamping jig which maintains the parallel relationship of the ribs at a fixed angular and lateral position with respect to the tube.

The invention provides, in the second stage in the creation of a bonded aircraft control element, a jig which has pivoted contoured arms to clampingly engage the skin in areas in register over the ribs and trailing edge such that the areas to be bonded receive the proper bonding pressure. This pressure is supplied by means of a fluid pressure expansible means and manifold system connected thereto.

In addition to the air frame, wing and control element jigs, the invention includes a jig for bonding a frame member for an airplane cutout to the periphery of the cutout which is a transitory self-supporting jig having opposing members which may be moved into and out of clamping engagement with the margin of the skin defining the cutout by means of screw means connecting the two opposing members. The opposing pressure applying surfaces of the two members include at least one fluid pressure expansible means for application of the proper bonding pressure and a brief description.

3,669,802

APPARATUS FOR MANUFACTURING A MULTIPLY TUBE SECTION CONSISTING OF AT LEAST TWO WEBS OF PLASTICS MATERIAL SHEETING AND INTENDED FOR USE IN THE MANUFACTURING OF BAGS

Richard Feldkamper, Lengerich, Westphalia, Germany, assignor to Windmoller & Holscher, Westphalia, Germany

Filed Mar. 24, 1969, Ser. No. 809,841

Claims priority, application Germany, Mar. 25, 1968, W 41,937; Aug. 16, 1968, P 17 86 095.6

Int. Cl. B32b *1/00*

U.S. Cl. 156—387 **10 Claims**

An imprint is to be provided on one of the sheeting surfaces defining an interface between the plies. One of the webs of plastics material sheeting is subjected to a known surface-activating treatment on one surface so that the same is adapted to be printed upon. Said surface is provided with the desired imprint, which is subsequently thermally dried and cooled thereafter. The other sheeting web or webs is or are heat-treated to cause it or them to assume a condition which corresponds as closely as possible to the condition of the printed sheeting web, and is also subjected to a surface-activating treatment. The sheeting webs are then superimposed with laterally offset edges and so that their activated surfaces contact each other and the printed surface of the printed sheeting is covered by an adjacent, unprinted sheeting web. The sheeting webs which are thus superimposed are bonded together by the action of pressure heat. The resulting multi-ply sheeting web having offset edges is formed into a tubing in known manner in that the edges of each sheeting ply are joined by an adhered or heat-sealed, longitudinal seam.

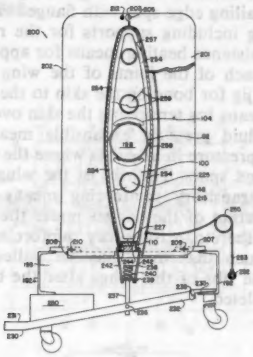
3,669,803
AIRPLANE TOOLING

Richard L. Jarvis, North Olmsted, and Walter Kully, Akron, Ohio, assignors to American Aviation Corporation, Cleveland, Ohio

Original application Nov. 20, 1968, Ser. No. 777,362. Divided and this application May 20, 1970, Ser. No. 39,003

Int. Cl. B32b *31/02*

U.S. Cl. 156—477 9 Claims



Briefly, the invention relates to jigs for placing aircraft component parts in assembled relationship and providing the pressure to bond them into a stressed skin construction.

A generic concept to the invention is the use of selectively actuated pressure applying surfaces over the areas to be bonded while the parts are held in their proper relative locations.

One portion of the invention relates to the bonding of an upper aft fuselage section comprising flanged bulkhead sections and stringers and a stressed skin thereover in a single-stage jig having fluid expansible diaphragm over each of the areas to be joined, the fluid expansible diaphragms being in one half of a jig which is pinned together to hold each of the bulkhead stringer and skin components in proper relation while providing a reaction force upon the application of the bonding pressure by means of the introduction of pressure into the diaphragms.

A second portion of the invention relates to the construction of a skeleton of a wing having a main tubular spar and a trailing edge spar with flanged ribs of stamped metal, the jig including supports for the ribs and spars, individual resistance heating means for applying heat and pressure at each of the joints of the wing skeleton. The second-stage jig for bonding the skin to the wing skeleton includes a means for tensioning the skin over the skeleton as well as fluid pressure expansible means to provide the bonding pressure in all areas where the skin is bonded to the ribs and spars. The ribs of the wings have flanges into which transitory reinforcing means closely fit to prevent deflection of the flanges under the bonding pressure applied thereto, a transitory reinforcing means being segmented such that they may be pulled out through cutouts in the ribs of the wings after the bonding operation is completed.

A further portion of the invention relates to bonding of a plurality of ribs and a torque tube of an aircraft control element in assembled relation by means of a liquid epoxy resin in a tube cradle and rib clamping jig which maintains the parallel relationship of the ribs at a fixed angular and lateral position with respect to the tube.

The invention provides, in the second stage in the creation of a bonded aircraft control element, a jig which has pivoted contoured arms to clampingly engage the skin in areas in register over the ribs and trailing edge such that the areas to be bonded receive the proper bonding pressure. This pressure is supplied by means of a fluid pressure expansible means and manifold system connected thereto.

In addition to the air frame, wing and control element jigs, the invention includes a jig for bonding a frame member for an airplane cutout to the periphery of the cutout which is a transitory self-supporting jig having opposing members which may be moved into and out of clamping engagement with the margin of the skin defining the cutout by means of screw means connecting the two opposing members. The opposing pressure applying surfaces of the two members include at least one fluid pressure expansible means for application of the proper bonding pressure and a brief description.

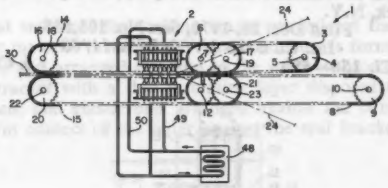
3,669,804
APPARATUS FOR BONDING CONTINUOUS FLEXIBLE STRANDS COATED WITH A THERMOPLASTIC ADHESIVE TO THE SURFACE OF MOVING VENEER STRIPS

Victor H. Clausen, Bellevue, and Arnold Zweig, Olympia, Wash., assignors to Simpson Timber Company, Seattle, Wash.

Filed May 11, 1970, Ser. No. 35,978

Int. Cl. B32b *31/20, 31/10*

U.S. Cl. 156—544 5 Claims



Continuous, flexible strands having a thermoplastic adhesive applied thereto are continuously bonded to crowded together strips of random width wood veneer by means of multiple, independently mounted shoe members in pressure contact with the surface of the veneer, the shoes being of a length to follow undulations which occur in veneer sliced from a log with a rotary lathe. The first of the shoes contacting the adhesive coated strands is heated to keep the thermoplastic adhesive on the strands in a flowable state as they pass under and are pressed against the surface of the veneer strips. The remainder of the shoes are cooled with a cooling medium to cool the adhesive on the strands sufficiently to bond the strands to the veneer surface.

3,669,805
DEVICE FOR FOLDING ONTO, AND JOINING WITH, ONE ANOTHER TWO SIDE EDGE PORTIONS OF A HEAT SEALING FOIL

Sverre Engvoll, Spanga, Sweden, assignor to Arenco Aktiebolag, Stockholm-Vallingby, Sweden

Filed Nov. 19, 1969, Ser. No. 877,920

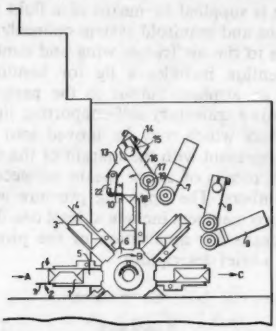
Claims priority, application Sweden, Nov. 22, 1968, 15,971/68

Int. Cl. B65c *9/36;* B32b *31/20*

U.S. Cl. 156—567 2 Claims

An apparatus for folding over and joining together the opposite flaps of a heat sealable foil wrapped around three sides of a cigarette pack. At the folding and sealing station a first shoe is moved across the fourth side of

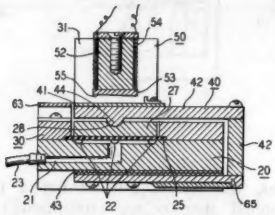
the pack to fold down the first flap. As this shoe is retracted a freely rotatable heated cylindrical roller is pivotally swept across the fourth side from the opposite direction, simultaneously folding the second flap over the first one and heat sealing the two flaps together.



3,669,806
BONDING PRESS HAVING IMPROVED SUPPORT BASE STRUCTURE

Robert Holbrook Cushman, Huntingdon Valley, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,588
Int. Cl. B32b *31/00;* B02c *11/08*
U.S. Cl. 156—580 **6 Claims**



A bonding press is disclosed which comprises a ram, a support base to carry components to be bonded, a platten which moves the support base towards the ram, a diaphragm which moves the platten in response to applications of fluid pressure and a cantilever mounted beam having its free end attached to the support base.

3,669,807
AIRPLANE TOOLING

Richard L. Jarvis, North Olmstead, and Walter Kully, Akron, Ohio, assignors to American Aviation Corporation, Cleveland, Ohio

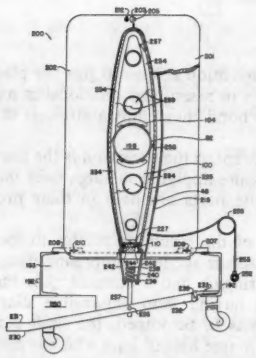
Original application Nov. 20, 1968, Ser. No. 777,362. Divided and this application May 21, 1970, Ser. No. 39,478
Int. Cl. B32b *31/14, 3/04*
U.S. Cl. 156—581 **2 Claims**

Briefly, the invention relates to jigs for placing aircraft component parts in assembled relationship and providing the pressure to bond them into a stressed skin construction.

A generic concept to the invention is the use of selectively actuated pressure applying surfaces over the areas to be bonded while the parts are held in their proper relative locations.

One portion of the invention relates to the bonding of an upper aft fuselage section comprising flanged bulkhead sections and stringers and a stressed skin thereover in a single-stage jig having fluid expansible diaphragm over each of the areas to be joined, the fluid expansible diaphragms being in one half of a jig which is pinned together to hold each of the bulkhead stringer and skin components in proper relation while providing a reaction force upon the application of the bonding pressure by means of the introduction of pressure into the diaphragms.

A second portion of the invention relates to the construction of a skeleton of a wing having a main tubular spar and a trailing edge spar with flanged ribs of stamped metal, the jig including supports for the ribs and spars, individual resistance heating means for applying heat and pressure at each of the joints of the wing skeleton. The second-stage jig for bonding the skin to the wing skeleton includes a means for tensioning the skin over the skeleton as well as fluid pressure expansible means to provide the bonding pressure in all areas where the skin is bonded to the ribs and spars. The ribs of the wings have flanges into which transitory reinforcing means closely fit to prevent deflection of the flanges under the bonding pressure applied thereto, a transitory reinforcing means being segmented such that they may be pulled out through cutouts in the ribs of the wings after the bonding operation is completed.



A further portion of the invention relates to bonding of a plurality of ribs and a torque tube of an aircraft control element in assembled relation by means of a liquid epoxy resin in a tube cradle and rib clamping jig which maintains the parallel relationship of the ribs at a fixed angular and lateral position with respect to the tube.

The invention provides, in the second stage in the creation of the bonded aircraft control element, a jig which has pivoted contoured arms to clampingly engage the skin in areas in register over the ribs and trailing edge such that the areas to be bonded receive the proper bonding pressure. This pressure in supplied by means of a fluid pressure expansible means and manifold system connected thereto.

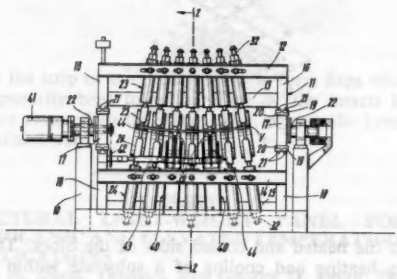
In addition to the air frame, wing and control element jigs, the invention includes a jig for bonding a frame member for an airplane cutout to the periphery of the cutout which is a transitory self-supporting jig having opposing members which may be moved into and out of clamping engagement with the margin of the skin defining the cutout by means of screw means connecting the two opposing members. The opposing pressure applying surfaces of the two members include at least one fluid pressure expansible means for application of the proper bonding pressure and a brief description.

3,669,808

ROLLING APPARATUS FOR THE ROLLING TOGETHER OF CURVED GLASS SHEETS WITH INTERPOSED PLASTICS SHEETS TO FORM A LAMINATE

Kurt Klotzbach, Wittener Strasse 3, Dusseldorf-Rath, Germany, and Johann Herzog, Stockumer Kirschstrasse 1, Dusseldorf-Nord, Germany

Filed July 21, 1970, Ser. No. 56,781
Claims priority, application Germany, July 23, 1969, G 69 29 022.8
Int. Cl. B30b *3/04;* B32b *31/00*
U.S. Cl. 156—582 15 Claims



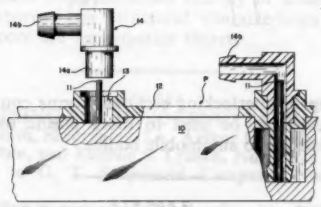
Apparatus for rolling together superimposed curved sheets to form a curved laminate comprises a pivoted frame in which are mounted two opposed groups of pressure roller units. Each unit comprises pressure rollers carried on a guide rod slidably and rotatably mounted in a hollow housing which contains a spring biassing the guide rod to one end of the housing. The housings of the pressure roller units are individually adjustable in position on the housing so that the apparatus can be set so that the combined roller gap defined between the opposed groups of pressure rollers, has any desired curvature.

3,669,809

APPARATUS AND METHODS FOR FRICTION WELDING PLASTIC PARTS WHICH REQUIRE A PARTICULAR RELATIVE ANGULAR ORIENTATION

Gaylord W. Brown, Beaverton, Mich., assignor to Koehring Company

Filed Aug. 13, 1969, Ser. No. 849,732
Int. Cl. B30b *3/02;* B32b *31/22*
U.S. Cl. 156—582 16 Claims



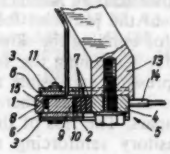
Friction welding machinery and methods wherein axially aligned part holders hold synthetic plastic parts which are to be friction welded together. The part holders are relatively rotated and a speed sensor, in the form of radially expansible and contractable stop fingers, operates under the influence of centrifugal force to indicate when the relative speed of the parts is such that friction welding is occurring and traps a stop located in a predetermined position such that one of the part holders is stopped in a predetermined angular position relative to the other. The trap fingers are carried by the holder for the part which requires location and the stop may be carried by the other holder or mounted on the frame of the machine.

3,669,810

HEAT SEAL TOOL

Klaus Domke, Stuttgart-Weilimdorf, Germany, assignor to Fr. Hesser Maschinenfabrik AG, Stuttgart-Bad Cannstatt, Germany

Filed Mar. 13, 1970, Ser. No. 19,402
Claims priority, application Germany, Mar. 15, 1969, P 19 13 294.6
Int. Cl. B29c *19/02;* B32b *31/20*
U.S. Cl. 156—583 5 Claims



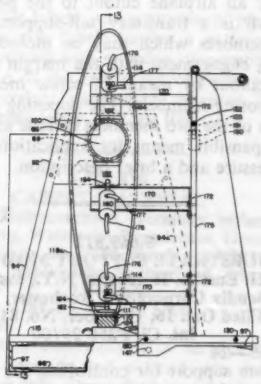
Heat seal tool for making seams on foils of thermoplastic material in which the heat conductor is formed as a band and arranged opposite to the work surface of the seal bracket with a thin insulating layer disposed therebetween; and elastic bias arranged against the band for uniform contact of the latter against the seal bracket.

3,669,811

AIRPLANE TOOLING

Richard L. Jarvis, 24258 Gessner Road, North Olmstead, Ohio 44070, and Walter Kully, 2290 Tripplet Blvd., Akron, Ohio 44312

Original application Nov. 20, 1968, Ser. No. 777,362, now Patent No. 3,616,075, dated Oct. 26, 1971. Divided and this application May 21, 1970, Ser. No. 48,606
Int. Cl. B30b *3/04, 15/34*
U.S. Cl. 156—583 6 Claims



Briefly, the invention relates to jigs for placing aircraft component parts in assembled relationship and providing

the pressure to bond them into a stressed skin construction.

A generic concept to the invention is the use of selectively actuated pressure applying surfaces over the areas to be bonded while the parts are held in their proper relative locations.

One portion of the invention relates to the bonding of an upper after fuselage section comprising flanged bulkhead sections and stringers and a stressed skin thereover in a single-stage jig having fluid expansible diaphragm over each of the areas to be joined, the fluid expansible diaphragms being in one-half of a jig which is pinned together to hold each of the bulkhead stringer and skin components in proper relation while providing a reaction force upon the application of the bonding pressure by means of the introduction of pressure into the diaphragms.

A second portion of the invention relates to the construction of a skeleton of a wing having a main tubular spar and a trailing edge spar with flanged ribs of stamped metal, the jig including supports for the ribs and spars, individual resistance heating means for applying heat and pressure at each of the joints of the wing skeleton. The second-stage jig for bonding the skin to the wing skeleton includes means for tensioning the skin over the skeleton as well as fluid pressure expansible means to provide the bonding pressure in all areas where the skin is bonded to the ribs and spars. The ribs of the wings have flanges into which transitory reinforcing means closely fit to prevent deflection of the flanges under the bonding pressure applied thereto, a transitory reinforcing means being segmented such that they may be pulled out through cutouts in the ribs of the wings after the bonding operation is completed.

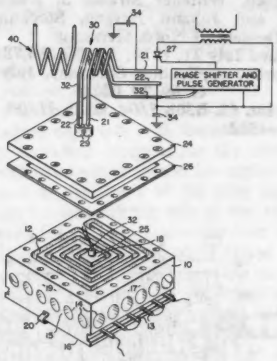
A further portion of the invention relates to bonding of a plurality of ribs and a torque tube of an aircraft control element in assembled relation by means of a liquid epoxy resin in a tube cradle and rib clamping jig which maintains the parallel relationship of the ribs at a fixed angular and lateral position with respect to the tube.

The invention provides, in the second stage in the creation of a bonded aircraft control element, a jig which has pivoted contoured arms to clampingly engage the skin in areas in register over the ribs and trailing edge such that the areas to be bonded receive the proper bonding pressure. This pressure is supplied by means of a fluid pressure expansible means and manifold system connected thereto.

In addition to the air frame, wing and control element jigs, the invention includes a jig for bonding a frame member for an airplane cutout to the periphery of the cutout which is a transitory self-supporting jig having opposing members which may be moved into and out of clamping engagement with the margin of the skin defining the cutout by means of screw means connecting the two opposing members. The opposing pressure applying surfaces of the two members include at least one fluid pressure expansible means for application of the proper bonding pressure and a brief description.

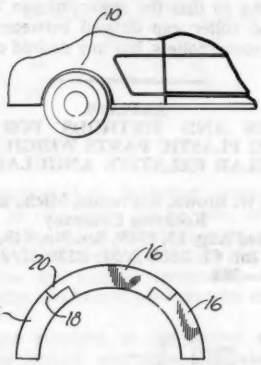
3,669,812
SUBSTRATE SUPPORT MODULE
Frieder H. Ensslin, Rochester, N.Y., assignor to The Bendix Corporation, Rochester, N.Y.
Filed Oct. 16, 1970, Ser. No. 81,321
Int. Cl. F25b *29/00*
U.S. Cl. 165—26 **7 Claims**

A substrate support for controlling the temperature of a substrate during outgassing, deposition, sputter etching and bias sputtering, and after deposition. This support comprises a block of thermal conducting material having heating means at one side and cooling means at the opposite side. The material cross section of the block is reduced by a series of holes drilled from two directions into the block at 90° to one another so that a great number of equal size columns equidistantly spaced con-



nect the heated and cooled sides of the block. This permits heating and cooling of a substrate within a very few minutes.

3,669,813
AUTO BODY SECTIONAL SHAPING FORMS
Alfred Andrea, 15 French Terrace, Watertown, Mass. 02172
Filed Mar. 31, 1970, Ser. No. 24,301
Int. Cl. B32b *3/14*
U.S. Cl. 161—37 **4 Claims**

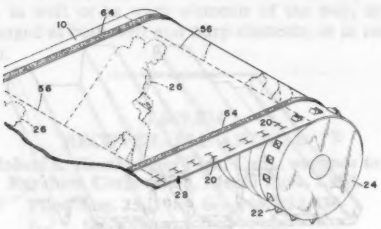


Preshaped, interlocking sectional forms constructed of rigid plastic can be used to mold plastic used for repairing damage to automobile bodies.

3,669,814
PRE-PRINTED INSERTS AND FEED MEANS THEREFOR
Hans G. Faltin, York, Pa., assignor to Advance Enterprises, Inc., York, Pa.
Filed Feb. 27, 1970, Ser. No. 15,058
Int. Cl. B32b *3/10*
U.S. Cl. 161—37 **6 Claims**

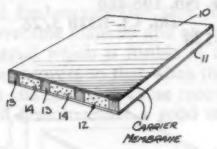
Inserts to be attached by adhesive to a carrying piece such as a rapidly moving printed web for newspapers,

magazines, etc., the inserts being pre-printed and provided with feeding means comprising a plurality of self-closing or disappearing holes engageable by pin-type feed wheels of feeding mechanism and formed by incisions



made in the strip of said inserts so as to form flaps which are temporarily bent from the plane of the inserts but which are restored to the plane upon affixing the inserts to the printed web.

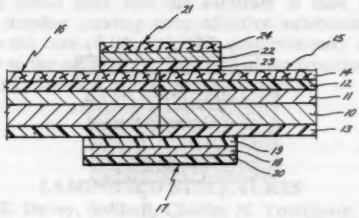
3,669,815
STRUCTURAL LIGHT-WEIGHT PANEL FOR CRYOGENIC AND ELEVATED TEMPERATURE APPLICATIONS
Ramesh R. Desai, Teaneck, and George D. Dohn, Park Ridge, N.J., assignors to Balsa Development Corporation, Northvale, N.J.
Filed Feb. 10, 1971, Ser. No. 114,201
Int. Cl. B32b *2/14;* **B65d** *25/18*
U.S. Cl. 161—37 **9 Claims**



A structural light-weight panel of high strength, having thermal insulation properties that render the panel particularly suitable for cryogenic and elevated temperature applications. The panel is constituted by a composite core bonded to a carrier membrane or laminated to facing skins, the core including at least one layer formed by a series of balsa beams in spaced parallel relation, the spacing between the beams being filled with slabs of foam plastic material whose K-factor is similar to that of balsa, whereby the overall thermal insulating characteristics of the composite core are effectively equivalent to that of a homogeneous core composed entirely of foam plastic material, whereas the structural characteristics of the composite core are far superior thereto.

3,669,816
LINING FOR CRYOGENIC TANK
Ernest L. Smith, Shreveport, La., Arthur R. Duffy, Worthington, Ohio, and Eugene S. Lyman, Northfield, Minn., assignors to G. T. Schjeldahl Company, Northfield, Minn.
Continuation-in-part of application Ser. No. 862,788, Oct. 1, 1969. This application Oct. 1, 1969, Ser. No. 862,864
Int. Cl. B32b *15/08, 1/02;* **B65d** *87/34*
U.S. Cl. 161—38 **3 Claims**

This invention relates to a lining for use in cryogenic tanks wherein sheets of laminate material comprising multiple layers of woven polyethylene terephthalate fibers, aluminum, and stress-oriented polyethylene terephthalate films, are joined by tapes of laminate material comprising layers of like materials to form a lining which is substantially impermeable to liquids and gases at cryogenic temperatures.



3,669,817
REVERSIBLE FLOORING
James G. McDevitt, 117 N. Adelaide, Fenton, Mich. 48430
Filed Mar. 16, 1970, Ser. No. 19,915
Int. Cl. B60r *27/00*
U.S. Cl. 161—44 **11 Claims**

A flooring for use within an automobile or the like consisting of a carpet material bonded to a fiberboard material, the two bonded materials being cut to a rectilinear shape, and being adapted to be disposed in a horizontal position on the permanent floor of a vehicle without interfering with the side wall structure of the vehicle. The bonded materials form a flooring which may be selectively reversed from one surface to the other depending upon its required use within the automobile.

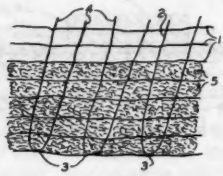
3,669,818
TEXTILE PRODUCT AND PROCESS
Daniel C. Stark, La Grange, Ga., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed June 15, 1970, Ser. No. 46,005
Int. Cl. D03d *27/00, 27/08*
U.S. Cl. 161—63 **15 Claims**

A printed textile fabric, and a process of producing the same, wherein a pile fabric having a patterned surface construction is printed with a design superimposed on the patterned surface of the fabric out of registry therewith to provide a product particularly adapted for use in carpets, towels, upholstery, and the like.

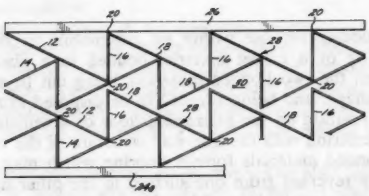
3,669,819
CARPET MATERIAL
Dieter Bischoff, Hohensachsen, Germany, assignor to Carl Freudenberg, Weinheim-Bergstrasse, Germany
Filed Apr. 20, 1970, Ser. No. 29,931
Claims priority, application Switzerland, May 7, 1969, 7,042/69
Int. Cl. D04h *11/00*
U.S. Cl. 161—66 **5 Claims**

Carpet consisting essentially of a needled non-woven fleece having a floorside and a tread side, substantially horizontally extending fibers forming the body of the fleece, and, securing the fibers of the body of the fleece together, generally vertically extending needled fibers having looped sections on the floor side of the fleece and free fiber ends adjacent the tread side thereof, the floor side and

the tread side being distinguished from each other in that the floor side harbors said looped sections and is impregnated with a binder securing fibers of the fleece together and forming a backing for the carpet, while the tread side is substantially free of binder and has said fiber ends disposed therein and adjacent thereto.



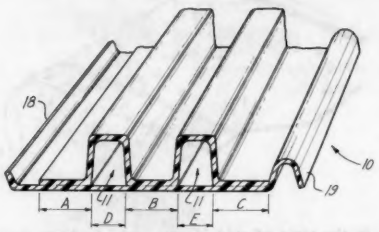
3,669,820
CELLULAR STRUCTURE
Carl K. Fredericks, San Diego, Calif., assignor to Corlite Corporation, San Diego, Calif.
Continuation-in-part of application Ser. No. 865,087, Oct. 9, 1969. This application June 19, 1970, Ser. No. 47,710
Int. Cl. B32b *3/12, 3/28*
U.S. Cl. 161—68 **12 Claims**



A cellular, honeycomb-like structure comprised of a plurality of elements in stacked or juxtaposed relation, and each having a pattern of corrugations. At least every other element is characterized by a plurality of pairs of sections of dissimilar length which each define a corrugation. The corrugations of adjacent elements internest to define closed, generally triangular cells. It is characteristic of the structure that the peaks or nodes of the corrugations of each element engage upon the internode portions or slopes of the corrugations of the adjacent element. During assembly this enables relative movement between the elements until internesting is achieved. It is also characteristic of the structure that each cell is defined by one complete internodal section and portions of a pair of internodal sections of two adjoining elements. Various configurations of the structure for various purposes are disclosed.

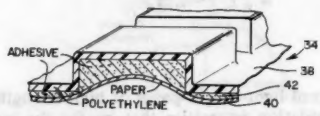
3,669,821
FIBER-REINFORCED PLASTIC STRUCTURAL MEMBER
Merle F. Sharp, Delmont, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.
Filed Aug. 2, 1968, Ser. No. 749,887
Int. Cl. B32b *1/00*
U.S. Cl. 161—127 **3 Claims**

Fiber-reinforced plastic structural members are fabricated with at least one lengthwise cell. The members are made from two component elements, each having contiguous surfaces in the assembly which surfaces become coalesced in the integral structural member. One of the components is formed, partially gelled, and before complete gellation, is engaged with the other component which



is at that time ungelled. With the two components thus assembled, the overall member is cured to produce a unitary structural member having at least one lengthwise cell. The process is especially useful in producing components for operating louvers.

3,669,822
FILM-TISSUE PAPER ADHESIVE LAMINATES
Samuel H. Cowen, Southfield, Mich., assignor to Chemed Corporation, Cincinnati, Ohio
Continuation-in-part of application Ser. No. 780,075, Nov. 29, 1968, which is a continuation-in-part of application Ser. No. 695,710, Jan. 4, 1968. This application Jan. 11, 1971, Ser. No. 105,480
Int. Cl. B32b *3/28*
U.S. Cl. 161—130 **5 Claims**



The invention disclosed is an adhesively bound laminate formed of a thin thermoplastic film pre-embossed throughout substantially the entire surface area, and having at least one tissue paper layer adhesively bound thereto by means of an aqueous-base adhesive composition.

3,669,823
NON-WOVEN WEB
Dennis E. Wood, Penfield, N.Y., assignor to Curlator Corporation, East Rochester, N.Y.
Filed June 4, 1969, Ser. No. 830,373
Int. Cl. B32b *3/18;* **D04h** *5/00*
U.S. Cl. 161—141 **8 Claims**

This web comprises fibers arranged in random fashion lengthwise, widthwise, and depthwise of the web and

incorporating therein continuous elements, such as filaments, which are foam-coated and which bond adjacent fibers in the regions of crossing of the fibers and the foam-coated elements, thereby bonding the web into an integral structure. The continuous elements may be arranged as weft or as warp elements of the web, or may be arranged as both weft and warp elements, or in random fashion.

3,669,824

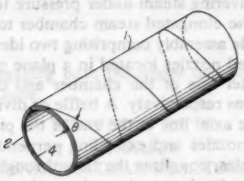
RECOVERABLE ARTICLE

Robert L. Hess, Menlo Park, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Aug. 25, 1969, Ser. No. 852,830

Int. Cl. B32b *7/02, 7/10*

U.S. Cl. 161—166 **11 Claims**



The present invention relates to a heat-recoverable article particularly adapted for use as a covering on wires, cables and the like. More particularly, the invention relates to a helical heat-recoverable tape, having an outer wall of heat-recoverable material and an inner wall which comprises a material which is fusible at the temperature at which the tape recovers so that when the tape is placed around an article and heated to cause recovery, the fusible inner surface will flow to cause a good seal between the tape and article.

ERRATUM

For Class 161—167 see:
Patent No. 3,669,787

3,669,825

ADHERING RESINS TO SUBSTRATES, ESPECIALLY METAL, BY RADIATION

Roger P. Hall, Mayfield Heights, Ohio, assignor to SCM Corporation, New York, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 682,140, Nov. 13, 1967, and Ser. No. 737,576, June 17, 1968. This application Oct. 3, 1968, Ser. No. 764,932

Int. Cl. B32b *31/28;* **C09j** *3/14*

U.S. Cl. 161—188 **19 Claims**

A process for bonding by radiation a substrate, and especially one having a metallic surface, with a substantially catalyst-free system containing a polymerizable organic unsaturated resin susceptible to free-radical catalysis; and the resulting product. In one form, a film of the resin is superimposed upon the substrate while a facing side of either the resinous film or substrate is contacted at any time prior to such radiation with an organic substituted, radiation-responsive ester of a metal acid, such as titanic acid or zirconic acid. Thereafter, the film and substrate are subjected to the high energy radiation to adhere one to the other. In another form, normally air-inhibited, thermosetting resins are bonded to substrates by a two-step process, wherein the resin film is first passed through one treating zone effective to impart mass integrity and thereby define a sheet, and the sheet together with the metal ester and the substrate is then passed through another treating zone effective substantially to complete the cure of the resin and simultaneously adhere the sheet to the substrate, at least one of the treating zones comprising exposure to high energy radiation.

3,669,826

LAMINATED STRUCTURES

Ronald E. Davey, Solihull, Charles N. Tomlinson, Suton Coldfield, and Alan White, Wythall, England, assignors to Treplex Safety Glass Company Limited, London, England

No Drawing. Filed May 19, 1969, Ser. No. 825,975

Claims priority, application Great Britain, May 24, 1968, 25,070/68

Int. Cl. B32b *15/08, 17/10*

U.S. Cl. 161—196 **7 Claims**

In a process for increasing the adhesion at the interface between a synthetic plastics material and a thin transparent material deposited upon a vitreous material surface in a laminated structure, the transparent material is selected from an electro-conductive metal film and an electro-conductive film covered by a film of metal oxide, and, prior to lamination, is treated with a solution of a potassium salt electrolyte, washed and dried.

3,669,827

SOLVENT RESISTANT POLYETHYLENE CONTAINERS

John McNaughton Kolyer, Morris Township, Morris County, and Albert Andrew Kveglis, Clifton, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed May 21, 1970, Ser. No. 39,511

Int. Cl. B29c *5/04;* **B32b** *27/08, 27/34*

U.S. Cl. 161—227 **5 Claims**

A method of preparing hollow polyethylene containers having a nylon liner by rotational casting whereby the polyethylene is rotationally molded; a copolymer of ethylene and an alkyl acrylate or methacrylate or a vinyl ester is added; molding is continued to bond a layer of the copolymer to the polyethylene; a catalysed and promoted lactam solution is added; and casting continued under anionic polymerization conditions for the lactam to form an inner nylon layer bonded to the copolymer. The process forms hollow polyethylene containers having a firmly bonded nylon liner which is resistant to solvents.

3,669,828

METHOD FOR PREPARING COLORED RUBBER LAMINATES

Teruyoshi Usamoto, Higashiosaka, Masao Yokota, Ibaraki, and Tamotu Kondo, Toyonaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

No Drawing. Filed June 11, 1969, Ser. No. 832,887

Claims priority, application Japan, June 21, 1968, 43/43,268

Int. Cl. B32b *27/20;* **C09j** *5/00*

U.S. Cl. 161—252 **6 Claims**

A colored rubber is prepared by sticking together vulcanized and semi-vulcanized rubbers containing an ethylene-propylene rubber and an inorganic filler into which a coloring and cross-linking agent has been blended, and vulcanizing the resulting assembly.

3,669,829

PAPER AND PAPER-LIKE FIBROUS STRUCTURES FROM MIXTURES OF NATURAL, ARTIFICIAL AND SYNTHETIC FIBERS

Cornelio Caldo; Ezio Danielli, both of Terni; Italo Incollingo, Milan, and Francesco Protospataro, Terni, all of Italy, assignors to Montecatine Edison S.p.A., Milan, Italy

Filed Feb. 2, 1970, Ser. No. 8,047
Claims priority, application Italy, Feb. 4, 1969, 12383 A/69
Int. Cl. D21f *11/00*; D21h *5/12*
U.S. Cl. 162—146 9 Claims

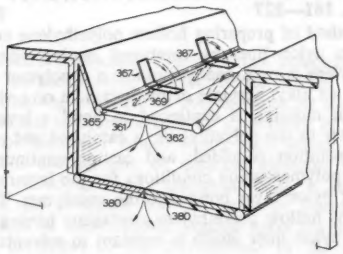
There are disclosed paper and paper-like fibrous structures comprising natural or artificial cellulose fibers and synthetic fibers which are fibers of a propylene polymer, such as polypropylene consisting essentially of isotactic polypropylene made up of isotactic macromolecules, and having a melt index of from 0.5 to 50, said propylene polymer fibers having a length not exceeding 20 mm and a count not greater than, and preferably lower than, 2.5 dtex. The fibrous structures may also comprise a polymeric binding agent, which can be a basic condensation polymer or copolymer of epichlorhydrin with at least one member selected from the group consisting of primary and secondary aliphatic amines, aromatic amines and heterocyclic amines.

3,669,830

BROKE RECEIVER CHAMBER FOR THE DRYER SECTION OF A PAPERMAKING MACHINE

Stanley C. Williams, Pointe Claire, Quebec, Canada, assignor to Dominion Engineering Works, Limited, Lachine, Quebec, Canada

Filed Dec. 22, 1969, Ser. No. 887,075
Claims priority, application Canada, Dec. 27, 1968, 038731
Int. Cl. D21f *1/66*
U.S. Cl. 162—264 4 Claims



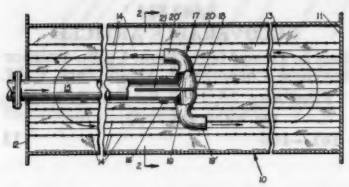
A broke receiver chamber located beneath the dryer section of a papermaking machine which includes an upper door assembly which provides access to the chamber for the broke, a lower door which allows removal of the broke from the chamber, and either seals or an upper door operating system which precludes passage of air upwardly from the chamber into the dryer section. The upper door assembly may comprise a first set of doors and a second set of doors therebeneath with an air lock inbetween, the upper door operating system including a motor and a first door actuator connected to the first set of doors and a second door actuator connected to the second set of doors and an interlock within a controller to prevent simultaneous opening of the first and second doors.

3,669,831

DISCHARGING NOZZLE ASSEMBLY FOR PRODUCING EQUALIZED DISTRIBUTION OF PRESSURIZED FLUID IN AN ELONGATED DRYING CHAMBER

Joseph H. Dupasquier, 5855 N.W. Skyline Drive, West Linn, Oreg.

Filed Aug. 13, 1970, Ser. No. 63,368
Int. Cl. D21f *5/18*
U.S. Cl. 162—290 2 Claims



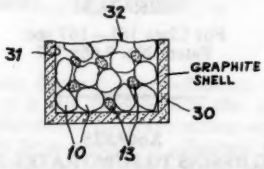
A pipe for delivering steam under pressure to the longitudinal center of the elongated steam chamber terminates in a discharging nozzle assembly comprising two identical but oppositely positioned nozzles located in a plane parallel to the longitudinal center line of the chamber and discharging in opposite directions respectively. A baffle or divider plate, extending along the axial line in the end of the pipe and at the entrance to the nozzles and extending perpendicular to the plane of the nozzles, equalizes the flow through the nozzles, causing an even circulation throughout the length of the chamber.

3,669,832

COATED-PARTICLE FUEL AND FERTILE ELEMENT FOR NUCLEAR REACTORS AND METHOD OF OPERATING SAME

Alfred Boettcher, Hangstrasse 11, 51 Aachen, Germany

Filed Jan. 15, 1968, Ser. No. 698,009
Claims priority, application Germany, Jan. 17, 1967, K 61180
Int. Cl. G21c *3/06*
U.S. Cl. 176—68 6 Claims



A fuel element for nuclear reactors which comprises coated fuel and breeder particles in which coated particles containing the fuel have diameters of at most half the diameters of coated particles containing the fertile material, the coated particles being embedded in a graphite shell or received in a vacuum-tight metal shell; the different particle sizes of the coated particles containing the fuel and fertile material mechanical discrimination between them.

3,669,833

NUCLEAR FUEL

Paul De Boeck, Mol; Bernard Marteel, Middelkerke, and Jozef Schrijvers, Dessel, all of Belgium, assignors to Belgonucleaire, S.A., Bruxelles, Belgium

Filed Sept. 30, 1968, Ser. No. 763,761
Claims priority, application Belgium, Sept. 29, 1967, 49,002
Int. Cl. G21c *3/18*
U.S. Cl. 176—68 4 Claims

A fuel rod which contains a stack of fuel pellets held in position in a lower cladding tube by an inner tube, secured

inside the lower cladding tube above the fuel pellets, the

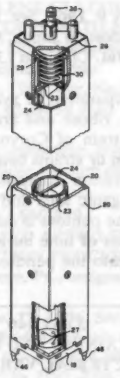
inner tube engaging both the upper fuel pellet in the stack and an upper tube.

3,669,834

CORE PLUG FOR NUCLEAR REACTOR AND METHOD OF OPERATING REACTOR

Ralph H. Klumb, Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 29, 1968, Ser. No. 771,443
Int. Cl. E21b *21/04*
U.S. Cl. 176—87 **7 Claims**



A core plug for replacing a fuel assembly of a reactor with the plug being devoid of nuclear fuel and having a high flow resistance such as to permit only sufficient coolant flow through it for adequately cooling the plug. In the operation of the reactor, should a fuel assembly within the central region of the core become defective, this defective assembly will be removed and there will be a reshuffling of the fuel assemblies so as to produce an open assembly space at the outermost core region. There will then be placed in this space a core plug having the aforementioned flow characteristics.

ERRATUM

For Class 177—136 see:
Patent No. 3,669,756

3,669,835

PROCESS FOR PREPARING VITAMIN B_2-GLUCOSIDE

Yukio Suzuki, Kurashiki, Japan, assignor to Hayashibara Company, Okayama-shi, Okayama, Japan

Filed Apr. 14, 1970, Ser. No. 28,511
Int. Cl. C12d *5/04*
U.S. Cl. 195—28 R **6 Claims**

The present invention relates to a process for preparing vitamin B_2-glucoside starting from a oligosaccharide having a glucoside linkage, such as maltose, liquefied starch or sucrose and the like, as the raw material using the microbial cell or the enzyme contained therein (trans glucosidase) of the species of *Mucor*.

3,669,836

METHOD FOR THE PRODUCTION OF COENZYME A

Yoshio Nakao, Ibaraki; Mitsuzo Kuno, Suita; Saburo Yamatodani, Minoo; Fumihiko Tanaka, Suita, and Tsutomu Nojiri, Nishinomiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 14, 1967, Ser. No. 630,803
Claims priority, application Japan, Apr. 16, 1966, 41/24234
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 N **15 Claims**

Coenzyme A is produced in a good yield by incubating hydrocarbons-assimilating microorganisms belonging to the genera Corynebacterium, Brevibacterium, Pseudomonas or Arthrobacter in a culture medium comprising a carbon source consisting mainly of hydrocarbons containing not less than 10 percent (volume/volume) of normal paraffins of nine to 23 carbon atoms, and recovering coenzyme A accumulated in the culture broth.

3,669,837

PROCESS FOR PRODUCING 3-(3,4-DIMETHOXYPHENYL)L-ALANINE BY RESOLUTION

Robert F. Parcell, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich.

Filed Mar. 30, 1970, Ser. No. 24,013
Int. Cl. C12d *13/00*
U.S. Cl. 195—29 **1 Claim**

N-acetyl-3-(3,4-dimethoxyphenyl)alanine is converted by the enzymatic action of an acylase from *Aspergillus oryzae* to 3-(3,4-dimethoxyphenyl)-L-alanine, leaving as an unreacted byproduct N-acetyl-3-(3,4-dimethoxyphenyl)-D-alanine. The process is preferably carried out in the presence of ammonia to adjust the pH to the desired value within the range of 6.0 to 9.0, and in the presence of cobaltous ions in a concentration of 10^{-4} to 5×10^{-2} M. 3-(3,4-Dimethoxyphenyl)-L-alanine is converted to 3-(3,4-dihydroxyphenyl)-L-alanine by cleavage of the ether groups.

3,669,838

METHOD OF MAKING ANTIBIOTICS CONTAINING THE AMINOCYCLITOL SUBUNIT

Wayne Thomas Shier; Kenneth L. Rinehart, Jr., and David Gottlieb, all of Urbana, Ill., assignors to University of Illinois Foundation, Urbana, Ill.

Continuation-in-part of application Ser. No. 842,712, July 17, 1969. This application Mar. 17, 1970, Ser. No. 20,433
Int. Cl. C12d *9/00*
U.S. Cl. 195—29 **12 Claims**

The method of making an antibiotic containing an aminocyclitol subunit. A microorganism mutant, incapable of biosynthesizing the aminocyclitol molecule but which molecule the unmutated microorganism biosynthesizes in the formation of an antibiotic when cultivated in a nutrient medium having no added aminocyclitol, is grown in the presence of an added aminocyclitol until substantial antibiotic activity is imparted to a culture medium, and the antibiotic is separated from the medium.

Streptomyces fradiae ATCC 21401 mutant grown in the presence of added streptamine gives hybrimycins A1 and A2,

and when grown in the presence of 2-epistreptamine gives hybrimycins B1 and B2.

Streptomyces rimosus forma *paromomycinus* ATCC 21485 mutant grown in the presence of added streptamine gives hybrimycins C1 and C2.

The hybrimycins have antibiotic activity.

3,669,839

STIMULATORY EFFECT OF ORGANIC ACIDS IN CITRIC ACID FERMENTATION

John H. Fried, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Dec. 9, 1970, Ser. No. 96,623
Int. Cl. C12d *1/04*
U.S. Cl. 195—37 **3 Claims**

A process for producing citric acid with certain Candida strains by aerobically fermenting an aqueous carbohydrate-containing nutrient medium in the presence of an added aliphatic tricarboxylic acid such as n-hexadecylcitric acid or trans-aconitic acid.

3,669,840

GLUCONIC ACID PRODUCTION

Herbert J. Hatcher, Bloomington, Minn., assignor to Economics Laboratory, Inc., St. Paul, Minn.

Filed Nov. 25, 1969, Ser. No. 879,807
Int. Cl. C12d *1/02*
U.S. Cl. 195—36 R **7 Claims**

Gluconic acid is produced by a fermentation process in which an inoculum of the fungus Aspergillus niger is transferred to a first production medium containing a source of glucose at a time when the glucose oxidase activity of the inoculum is increasing at its maximum rate. The fungus mycelium can be separated from the production medium at harvest time and reused in successive production media without the need for added nutrients until such time as nutrients are needed to revive the glucose oxidase activity.

3,669,841

ATTACHMENT OF ENZYMES TO SILICEOUS MATERIALS

Robert E. Miller, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Feb. 11, 1970, Ser. No. 10,654
Int. Cl. C12k *1/00*; C07g *7/02*
U.S. Cl. 195—63 **21 Claims**

Enzymes are attached to siliceous materials by silation of the siliceous material to introduce functional groups which are then linked to an enzyme by means of crosslinking agents. The products are enzymatically active heavy-duty composites in which the enzyme is covalently attached via the crosslinking agent and an organosilane to the siliceous material.

3,669,842

PURIFICATION OF L-ASPARAGINASE

Masao Tanaka; Tetuo Oka; Tatsuro Fujio, all of Machida-shi, and Kazuo Mochizuki, Shizuoka-ken, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed May 21, 1969, Ser. No. 826,665
Claims priority, application Japan, May 24, 1968, 43/34748
Int. Cl. C07g *7/028*
U.S. Cl. 195—66 A **13 Claims**

The present disclosure is directed to a process for purifying an enzyme preparation of L-asparaginase obtained from an L-asparaginase-producing microorganism belonging to the genus Serratia, wherein said microorganism produces together with the L-asparaginase, factors which inactivate the enzymatic activity of L-asparaginase; the improvement which comprises separating the inactivating factors from L-asparaginase during some stage of the purification process by salting out said factors with the addition of an inorganic salt and recovering purified L-asparaginase having an effective anti-tumor activity.

3,669,843

PROCESS FOR THE PRODUCTION OF URICASE

Knud Aunstrup, and Jorn Leo Mahler, both of Farum, Denmark, assignors to Novo Terapeutisk Laboratorium A/S, Copenhagen, Denmark

Filed Aug. 15, 1969, Ser. No. 858,907
Claims priority, application Great Britain, Aug. 19, 1968, 39,537/68
Int. Cl. C07g *7/028*; C12d *13/10*
U.S. Cl. 195—66 R **5 Claims**

Production of the enzyme uricase by aerobic cultivation of a strain of Bacillus fastidiosus or a variant thereof.

3,669,844

METHOD OF PRODUCING PROTEASE BY MICROORGANISM

Kunimori Niwa, 2-160, Kannon, Kawasaki-shi; Hiroshiro Shibai, 10-2-204, Tsujido-danchi, Fujisawa-shi; Masahiro Yasunaga, 5, Zenbu-cho, Hodogoya-Ku, Yokohama-shi; Yoshio Hirose, 1155, Nakamaruko, Kawasaki-shi; Teruo Shiro, 2-2-28, Matsunami, Chigasaki-shi, all of Kanagawa-ken, Japan

Filed Sept. 23, 1970, Ser. No. 74,831
Claims priority, application Japan, Oct. 3, 1969, 44/79033
Int. Cl. C12d *13/10*
U.S. Cl. 195—66 R **5 Claims**

Certain microorganisms of Bacillus, Candida and Rhodotorula produce protease when cultured on a medium containing an organic acid as the predominant source of carbon.

3,669,845

METHOD FOR THE PREPARATION OF PENTITOL FROM PENTOSE BY USING BACTERIA

Tomio Imai, Tokyo; Mutsuo Shimamura, Saitama; Juichi Yoshitake, Saitama, and Hitoshi Ohiwa, Saitama, all of Japan, assignors to Godo Shusei Kabushiki Kaisha, Tokyo, Japan

Filed July 9, 1969, Ser. No. 840,158
Claims priority, application Japan, Mar. 4, 1969, 44/15860
Int. Cl. C12d *13/00*
U.S. Cl. 195—43 **6 Claims**

Method for the preparation of xylitol, ribitol and anobitol by converting xylose, ribose and arabinose into the pentitol by the action of a strain of Corynebacterium, No. 208 or variation of said strain or strains belonging to Corynebacterium on a culture medium comprising a carbon source, a nitrogen source, inorganic salts and thiamine or a thiamine-containing source. The pentose is added to the culture medium at an optimal point of time during cultivation thereby to convert the pentose into the pentitol and permit recovery of said pentitol.

3,669,846

PROCESS FOR OBTAINING AND PRESERVING STABLE BACTERIAL VARIANTS

Yvonne Thuillier, Paris, France, assignor to Albert Rolland S.A., Paris, France

Filed Mar. 23, 1970, Ser. No. 21,765
Claims priority, application Great Britain, Mar. 25, 1969, 15,672/69
Int. Cl. C12k *3/00*
U.S. Cl. 195—96 **10 Claims**

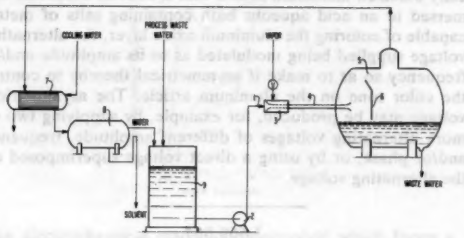
The invention provides a process for obtaining and preserving stable bacterial variants arising from pathogenic or non-pathogenic bacteria, the said process comprising subjecting the bacteria, in an acellular medium, at the moment of scissiparity, to the action of an inducing agent, especially plasmolysis by osmotic shock, so as to do away with the cell wall, and culturing the variants obtained on an osmotically equilibrated acellular nutrient medium. The bacterial variants so obtained can be used for the preparation of vaccines and of reagents for sero-diagnostics and the identification of germs of atypical illnesses.

3,669,847

PROCESS FOR SEPARATING STEAM-VOLATILE ORGANIC SOLVENTS FROM INDUSTRIAL PROCESS WASTE WATERS

Ernst Feder, Niederkassel; Kurt Deselaers, Ranzel, and Gunther Czehovsky, Niederkassel, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed July 24, 1969, Ser. No. 844,250
Claims priority, application Germany, July 26, 1968, P 17 92 147.0
Int. Cl. B01d *3/06*
U.S. Cl. 203—14 **6 Claims**



Steam-volatile organic solvents are removed from process waste waters by intimately mixing the process waste waters with steam to form an azeotropic steam mixture, withdrawing the azeotropic steam mixture from the resultant mixture of steam and water, and condensing said azeotropic steam mixture. The major amount of process waste water, thus freed of solvent content, is discharged as general sewage. An apparatus designed to conduct said process is also described.

3,669,848

PURIFYING PROPYLENE GLYCOL MONOESTERS USING VACUUM DISTILLATION

Paul Seiden, Cincinnati, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Dec. 19, 1969, Ser. No. 886,772
Int. Cl. B01d *3/10*
U.S. Cl. 203—94 **10 Claims**

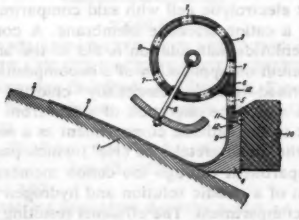
A method of purifying propylene glycol monoester emulsifiers utilizing non-molecular vacuum distillation.

3,669,849

COMPLEXLY SHAPED ARTICLES FORMED BY DEPOSITION PROCESSES

Ferenc J. Schmidt, Ardmore, Pa., assignor to General Electric Company

Original application Dec. 27, 1966, Ser. No. 604,799, now Patent No. 3,515,662. Divided and this application Oct. 16, 1969, Ser. No. 871,008
Int. Cl. C23b *7/00, 7/06, 5/48*
U.S. Cl. 204—11 **2 Claims**



Perforations in the recessed area of a surface mold are provided to produce smooth, even, relatively stress-free deposition on the recessed area. Fusible fillets may also be used to form rigid bridges over parts of the recessed area. A specific product is an integrally formed, rigidly supported, relatively stress-free electroplated mirror.

3,669,850

METHOD FOR THE PRODUCTION OF ABRASIVE BRUSHING ELEMENTS

Cedo Draca, 2165 Barnes Street, St. Laurent, Montreal 388, Quebec, Canada

Filed July 18, 1969, Ser. No. 843,090
Int. Cl. C23b *7/00, 5/48*
U.S. Cl. 204—16 **17 Claims**

An abrasive brushing element such as a wire bristle, a strip or a plate having the tip and a substantial portion thereof clad with a layer of a metal such as nickel, wherein is bound a layer or more of very fine abrasive powder, such as tungsten carbide. The article is produce by crushing a material of high hardness to a very fine particle size and imparting an electrostatic charge at the surface thereof. The fine particles are then caused to electrostatically adhere at the tip and along a substantial portion of the brushing element while metal plating, preferably with nickel at least that portion of the brushing element.

3,669,851

METHOD OF ELECTRODEPOSITING ONTO STAINLESS STEEL

Bruce J. Garvey, Cleveland, Ohio, assignor to Kewanee Oil Company, Bryn Mawr, Pa.

Filed Sept. 8, 1970, Ser. No. 70,558
Int. Cl. C23b *5/56, 5/50;* **B01d** *45/12*
U.S. Cl. 204—25 **4 Claims**

A process by which a metal may be plated on a stainless steel metal substrate whereby the final electro-plated composite possesses greatly improved adherence. Said process involves the electrodeposition of a chromium strike layer on the stainless steel base metal which is then followed by a nickel strike layer prior to plating of said metal. The chromium strike layer may be deposited from any standard chromium electrodeposition plating baths. The nickel strike layer may be deposited from a "Woods strike" nickel electroplating bath which can be either bromide or chloride. The bromide type is preferred and the composition and operating conditions of said bath comprise:

$NiBr_2$	100–800 g./l.
HBr	0.2–20% by weight
Current Density	5–200 a.s.f.
Bath temperature	60–115° F.

3,669,852

ELECTROPLATING GOLD

Earl D. Winters, Quakertown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 23, 1969, Ser. No. 868,777
Int. Cl. C23b *5/28*
U.S. Cl. 204—46 **2 Claims**

The removal of dissolved oxygen prior to and during plating from certain electroplating baths such as citrate and phosphate buffered gold cyanide plating baths, by introducing nitrogen gas or a chemical reducing agent such as hydrazine or sulfite ions into the bath, results both in in-

creased plating efficiencies of up to 98 percent and decreased thickness variation of the plated deposit, over the normally encountered current density range.

3,669,853

COUMARIN-CARRIER ADDITION AGENT FOR NICKEL BATHS

Sidney C. Beach, Cleveland, Ohio, assignor to Chemetron Corporation, Chicago, Ill.

Filed July 15, 1969, Ser. No. 842,027
Int. Cl. C23b 5/08, 5/46; B01k 3/00
U.S. Cl. 204—49 10 Claims

An improved coumarin addition agent is disclosed for use in nickel electrodeposition baths, wherein the coumarin is adsorbed on a bath-insoluble, friable, porous carrier material to produce a composition adapted to be placed in the filter commonly employed in plating baths.

3,669,854

ZINC ELECTROPLATING ELECTROLYTE AND PROCESS

Edward P. Harbulak, Allen Park, Mich., assignor to M & T Chemicals Inc., New York, N.Y.

Filed Aug. 3, 1970, Ser. No. 60,734
Int. Cl. C23b 5/10, 5/46
U.S. Cl. 204—55 R 14 Claims

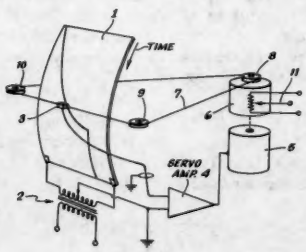
In accordance with certain of its aspects this invention relates to a process of producing bright zinc electrodeposits which comprises passing current from an anode to a metal cathode through an aqueous bath composition containing at least one zinc compound providing zinc ions for electroplating zinc, a bath-soluble polyether, and at least one non-aromatic α, β- unsaturated carbonyl compound for a time period sufficient to deposit a bright zinc electrodeposit upon said cathode.

3,669,855

CONTROL OF INTEGRAL COLOR ANODIZING PROCESS

Richard L. Smith, Livermore, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Jan. 28, 1970, Ser. No. 6,516
Int. Cl. C23b 9/02; B01k 3/00
U.S. Cl. 204—58 4 Claims



A process for controlling an integral color anodizing process to minimize the effect of variations in electrolyte bath composition, temperature and the like upon the color of the anodic oxide coatings comprising developing a voltage-time relationship to obtain a desired color and controlling the anodizing process in accordance with the developed voltage-time relationship.

3,669,856

PROCESS FOR THE PRODUCTION OF COLORED PROTECTIVE COATINGS ON ARTICLES OF ALUMINUM OR ALUMINUM ALLOYS

Ove Christopher Gedde, Gaupefaret 24, 1713 Gralum, Norway

Filed June 23, 1969, Ser. No. 835,668
Claims priority, application Norway, June 21, 1968, 2459/68
Int. Cl. C23b 9/02; B01k 1/00
U.S. Cl. 204—58 7 Claims

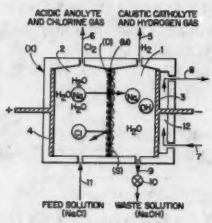
A process is applied for the production of colored, protective coatings on articles of aluminum or aluminum alloys by passing an alternating current between a previously anodically oxidized aluminum article and a counter-electrode immersed in an acid aqueous bath containing salts of metals capable of coloring the aluminum oxide layer, the alternating voltage supplied being modulated as to its amplitude and/or frequency so as to make it asymmetrical thereby to control the color tone on the aluminum article. The asymmetrical voltage may be produced, for example, by supplying two or more alternating voltages of different amplitude, frequency and/or phase, or by using a direct voltage superimposed on the alternating voltage.

3,669,857

ELECTROLYTIC CHLORINATION AND PH CONTROL OF WATER

Thomas A. Kirkham, Lexington; John W. Arnold, Wilmington, and Anthony J. Giuffrida, North Andover, all of Mass., assignors to Ionics Incorporated, Watertown, Mass.

Filed July 30, 1970, Ser. No. 59,636
Int. Cl. C02b 1/82; B01k 3/10
U.S. Cl. 204—151 6 Claims



A swimming pool water sterilizer and the method involved in the operation are disclosed employing a two electrode compartment electrolytic cell with said compartments being separated by a cation selective membrane. A concentrated alkali metal chloride salt solution is fed to the anode compartment wherein on application of a decomposition voltage there is formed therein essentially chlorine gas and hypochlorous acid. The migration of water from the anode compartment to the cathode compartment as a result of the solvation of the alkali metal ions (Na^+) which passes to the cathode compartment through the cation membrane allows the formation of a caustic solution and hydrogen gas within the cathode compartment. The effluents resulting from both compartments are fed into the recirculated pool water for sterilization. The pH of said water can be controlled by discharging to waste any excess basic catholyte at predetermined intervals at pre-set periods of time.

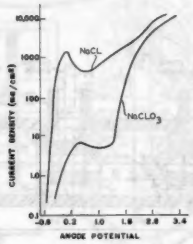
3,669,858
ELECTROCHEMICAL MACHINING

Mitchell A. La Boda, East Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation of application Ser. No. 664,770, Aug. 31, 1967, which is a continuation-in-part of application Ser. No. 446,389, Apr. 7, 1965. This application May 21, 1970, Ser. No. 37,494

Int. Cl. B23p *1/00*

U.S. Cl. 204—143 M 4 Claims



An electrochemical machining electrolyte which forms a specific electrochemical erosion inhibiting film, which film is susceptible to removal by the application of high current densities and potentials thereto. The principal ingredient of the preferred electrolyte for forming this specific film is at least one salt selected from the group consisting of sodium chlorate, potassium chlorate, sodium perchlorate and potassium perchlorate. pH modifiers such as sodium hydroxide, sodium carbonate, sodium borate and the like may be added. pHs between about 6.7 and 11 are the most effective.

3,669,859
PROCESS AND COMPOSITIONS FOR PROTECTING IMAGES WITH RESIN FILMS

Stewart H. Merrill, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 29, 1969, Ser. No. 854,314

Int. Cl. G03g *13/22;* B01k *5/02*

U.S. Cl. 204—181 8 Claims

Novel process and compositions are provided for forming protective coatings. The compositions feature a graft copolymer suspension in an electrically insulating carrier vehicle. The copolymer is comprised of a linear backbone chain formed of an unsaturated polymer soluble in the carrier vehicle, having grafted thereto pendant side chains substantially all of which are insoluble in the carrier vehicle. A developed image-bearing member which is contiguous with an electrically conductive backing is placed in close proximity to an electrode and a bias potential is applied between the electrode and the conductive backing. While this potential is being applied, the copolymer suspension is applied to the image-bearing surface of the member to deposit a uniform resin layer.

3,669,860
METHOD AND APPARATUS FOR APPLYING A FILM TO A SUBSTRATE SURFACE BY DIODE SPUTTERING

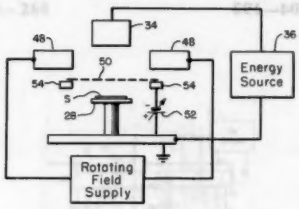
Terence J. Knowles, Oak Park, and Daniel A. Eaton, Chicago, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Apr. 1, 1970, Ser. No. 24,571

Int. Cl. C23c *15/00*

U.S. Cl. 204—192 10 Claims

Diode sputtering apparatus deposits a film on a substrate surface while protecting the substrate against overheating and other adverse effects due to electron bombardment. A magnetic field, transverse to an electric field between the cathode and substrate surface, is rotated about the cathode-substrate axis to deflect electrons submitted from the cathode into paths clear of the substrate surface. Further advantages in uniformity and increased rate of depositions are achieved.



3,669,861
R. F. DISCHARGE CLEANING TO IMPROVE ADHESION

John H. Cash, Jr., and Joe P. Keene, both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 28, 1967, Ser. No. 663,707

Int. Cl. C23c *15/00*

U.S. Cl. 204—192 3 Claims

A method of cleaning a semiconductor substrate in an inert gas atmosphere by use of R. F. energy is disclosed. The field of R. F. energy is controlled by a magnetic field which is perpendicular to the electric field of the R. F. .energy. Preferably, the R. F. energy is at a frequency of 13.560 MHz with a power of approximately 500 watts.

3,669,862
DEVICE FOR MEASURING AN ACTIVITY OF CUPRIC IONS

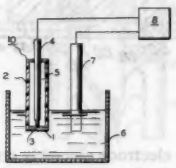
Hiroshi Hirata, and Masanao Arai, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 13, 1970, Ser. No. 27,476

Claims priority, application Japan, Apr. 20, 1969, 44/30419; 44/30420

Int. Cl. G01n *27/46*

U.S. Cl. 204—195 M 5 Claims



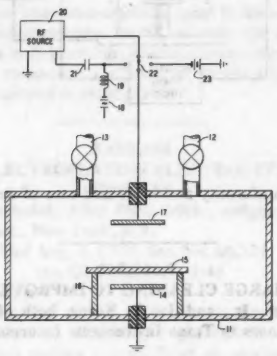
A device for measuring an activity of cupric ions comprises a selective electrode and a reference electrode immersed in a solution containing cupric ions, said selective electrode including a cuprous sulfide sintered plate having a lead connected to one surface thereof, whereby only another surface contacts with said solution.

3,669,863

TECHNIQUE FOR THE PREPARATION OF IRON OXIDE FILMS BY CATHODIC SPUTTERING

Frank Groom Peters, Nutley; William Robert Sinclair, Miles, and Vincent Sullivan, Summit, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 28, 1970, Ser. No. 101,478
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 6 Claims



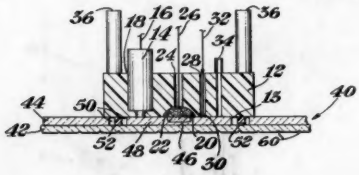
A technique for the preparation of iron oxide films designed for use as photomasks for thin film and semiconductor processing involves sputtering iron in a carbon monoxide ambient containing carbon dioxide upon a substrate member.

3,669,864

POLAROGRAPHIC ELECTRODE APPARATUS AND METHOD

Robert R. Fike, 5012 LeMans Drive, Indianapolis, Ind.

Filed Sept. 2, 1969, Ser. No. 854,660
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 R 5 Claims



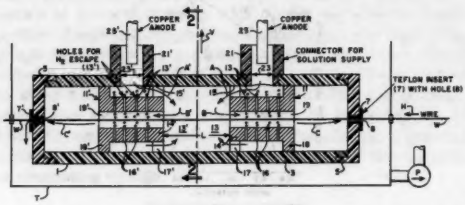
A polarographic electrode assembly comprising a confined working electrode is described. The electrode assembly is adapted to fit against a portion of a thin layer chromatogram to form a polarographic cell in which the electrodes of the electrode assembly are all in contact with an isolated zone of the thin layer containing a spot of substance to be assayed. A method of using the polarographic electrode assembly to assay materials separated by thin layer chromatography without elution of the spots containing the substance is also described.

3,669,865

APPARATUS FOR UNIFORMLY PLATING A CONTINUOUS CYLINDRICAL SUBSTRATE

Peter P. Semienko, Roslindale, and Emil Toledo, Brighton, both of Mass., assignors to Honeywell, Inc., Minneapolis, Minn.

Original application Jan. 3, 1966, Ser. No. 518,184, now Patent No. 3,506,546. Divided and this application Jan. 22, 1970, Ser. No. 10,689
Int. Cl. B01k *3/00*
U.S. Cl. 204—206 3 Claims



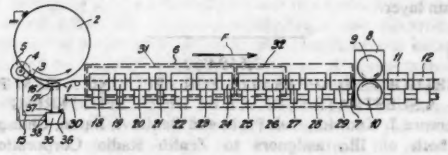
Apparatus for electroplating copper onto a wire substrate at very high speeds and continuously, and associated copper electrolytes and plating methods. An essentially hollow cylinder is provided as a plating cell through which the wire can be advanced and along which recirculated electrolytes can be passed. Recirculation inlets are provided to communicate with the central passage and are arranged to ionize the fluid uniformly and inject it into the passage so as to be distributed uniformly about the passing wire and to be directed symmetrically and radially against the wire and then diverted symmetrically and with agitation along the wire toward an exit port. Novel associated electroplating methods and electrolytes, such as copper cyanide and copper sulfate, are also described. The result is to plate copper very quickly, yet uniformly, onto the wire to provide a substrate of controlled surface configuration for subsequent plating of thin magnetic films.

3,669,866

APPARATUS FOR OBTAINING WIRES FOR MAGNETIC MEMORIES

Rene Fernand Victor Girard, Grenoble, and Jacques Le Guillerm, Avrille, both of France, assignors to Societe Industrielle Honeywell Bull, Paris, France

Filed Apr. 1, 1970, Ser. No. 24,635
Claims priority, application France, Apr. 3, 1969, 6910210
Int. Cl. C23b *5/68, 5/58*
U.S. Cl. 204—207 11 Claims



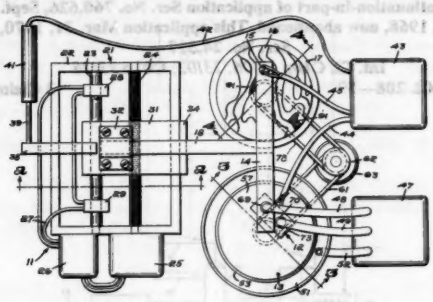
An apparatus for the continuous fabrication and testing of a wire having a conductive core covered with a thin magnetic film, wherein the conductive core is pulled with substantially zero tension through apparatus in which a magnetic film is deposited on the core and treated, and wherein the completed wire is then pushed through apparatus in which its physical properties are measured.

3,669,867

OPTICAL SURFACE GENERATING APPARATUS

Iwao P. Adachi, Lexington, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Apr. 15, 1968, Ser. No. 721,471
Int. Cl. B23p 1/02; C23b 5/76; E05d 15/22
U.S. Cl. 204—224 14 Claims



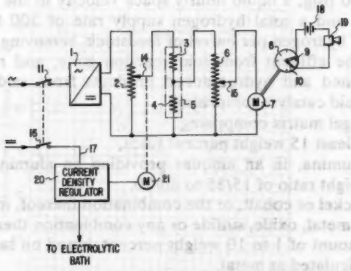
A surface generating system wherein a polishing electrode comprising a continuous stream of electrolyte is used to selectively polish an optical blank. During movement over the blank's surface, the electrode is selectively energized by a sensor element synchronously moving over a guide retaining information regarding contour errors on the surface blank.

3,669,868

LAYER THICKNESS INDICATING DEVICE FOR ELECTROLYTICALLY DEPOSITED MATERIALS

Hans-Wilhelm Lieber, and Rolf Kramer, both of Berlin, Germany, assignors to Fernsteuergerate Kurt Oelsch KG, Charlottenburg, Germany

Filed July 30, 1970, Ser. No. 59,472
Claims priority, application Germany, Aug. 1, 1969, P 19 39 125.4
Int. Cl. B01k 3/00
U.S. Cl. 204—228 10 Claims



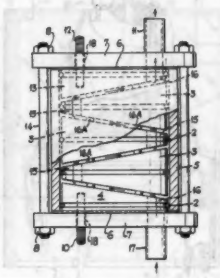
A device for indicating the thickness of a layer of material deposited in an electrolytic bath. In the device, the output signal from a constant voltage source is fed to a voltage proportioning circuit wherein the input voltage is proportioned according to the current density and efficiency of the electrolytic bath and for the deposition equivalent and the specific weight of the particular material to be deposited in the electrolytic bath. The thus proportioned voltage signal is then integrated with respect to time and an indication of the integrated value provided as a continuous measure of the thickness of the layer of material being deposited in the electrolytic bath.

3,669,869

ELECTROLYTIC CELLS

Derek Arthur Burton, Basingstoke, England, assignor to A. Johnson & Company (London) Limited, London, England

Filed Oct. 1, 1969, Ser. No. 862,861
Claims priority, application Great Britain, Oct. 1, 1968, 46,628/68
Int. Cl. B01k 3/04
U.S. Cl. 204—268 7 Claims



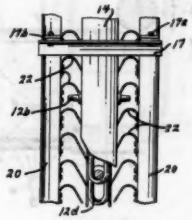
An electrolytic cell with spaced-apart electrodes in a row so constructed that the inter-electrode spaces are in series so that the electrolyte flows through them in succession. Preferably the electrodes are at least 1 centimeter thick and the inter-electrode spaces communicate with one another only by way of holes through the electrodes. The electrodes may be wedge-shaped.

3,669,870

ELECTROCOATING EQUIPMENT

Charles C. Boost, Oakland City; William S. Mitchell, and David M. Horton, both of Evansville, all of Ind., assignors to George Koch Sons, Inc., Evansville, Ind.

Filed Oct. 6, 1969, Ser. No. 864,066
Int. Cl. C23b 13/00; B01k 5/02
U.S. Cl. 204—297 11 Claims

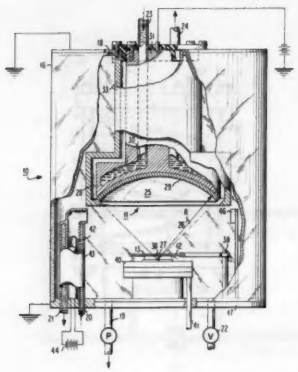


A hanger assembly for electrocoating equipment characterized by the use of a series of resilient metal bus springs or wipers, at ground electrical potential, in various wiping arrangements for achieving less system resistance, and, therefore, improved operating results.

3,669,871
SPUTTERING APPARATUS HAVING A CONCAVE SOURCE CATHODE

Jarl A. Elmgren, and Robert R. R. Rodite, both of Endwell, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 10, 1969, Ser. No. 856,762
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 2 Claims

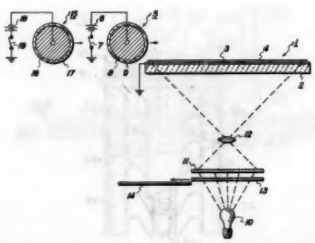


Sputtering apparatus in which the sputtering cathode is concave to produce a focusing effect on dislodged particles and concentrate the particles toward a point. The substrate being coated is movably mounted to construct the desired coating configuration. A modification is to orient single crystal bits on the cathode surface to further enhance preferential directional emission during sputtering.

3,669,872
IMAGING SYSTEM

Vsevolod Tulagin, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Original application Oct. 17, 1967, Ser. No. 675,892. Divided and this application Jan. 29, 1970, Ser. No. 12,532
Int. Cl. B01k *5/02*; C23b *13/00*
U.S. Cl. 204—299 3 Claims

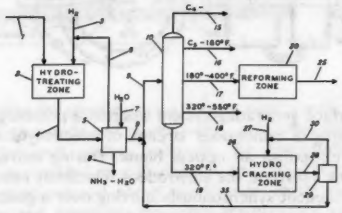


A method of selectively producing positive or negative photoelectrophoretic copies is described. A suspension of photosensitive particles sensitive to a first range of wavelengths is placed between two electrodes, one of which is transparent and the other of which has a surface sensitive to a second range of wavelengths. When a field is imposed across the suspension and an image is projected through the transparent electrode using radiation in only one of said first and second ranges, a positive or negative image is formed on a given electrode, depending on whether the electrode or the suspension is sensitive to the radiation used.

3,669,873
HYDROFINING-HYDROCRACKING PROCESS

Joseph Jaffe, Berkeley, and James R. Kittrell, Palos Verdes Estates, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of application Ser. No. 760,626, Sept. 18, 1968, now abandoned. This application Mar. 31, 1970, Ser. No. 24,317
Int. Cl. C10g *13/06, 23/02*; C01b *33/28*
U.S. Cl. 208—59 3 Claims



A hydrofining-hydrocracking process which comprises contacting a hydrocarbon feed containing more than 50 parts per million of organic nitrogen and substantial amounts of materials boiling above 200° F., said feed being selected from the group consisting of petroleum distillates, solvent-deasphalted petroleum residua, shale oils and coal tar distillates, in a reaction zone with hydrogen and a catalyst, a t hydrofining-hydrocracking conditions including a temperature in the range 400° to 950° F., a pressure in the range 800 to 3,500 psig, a liquid hourly space velocity in the range 0.1 to 5.0, and a total hydrogen supply rate of 200 to 20,000 SCF of hydrogen per barrel of feedstock, removing ammonia from the effluent from said reaction zone, and recovering hydrofined and hydrocracked products from said reaction zone, said catalyst comprising:

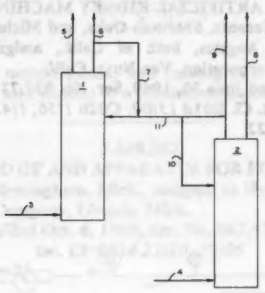
A. A gel matrix comprising:
a. at least 15 weight percent silica,
b. alumina, in an amount providing an alumina-to-silica weight ratio of 15/85 to 80/20,
c. Nickel or cobalt, or the combination thereof, in the form of metal, oxide, sulfide or any combination thereof, in an amount of 1 to 10 weight percent, based on said matrix, calculated as metal,
d. Molybdenum or tungsten, or the combination thereof, in the form of metal, oxide, sulfide or any combination thereof, in an amount of 5 to 25 weight percent, based on said matrix, calculated as metal;
B. A crystalline zeolitic molecular sieve:
a. containing less than 5 weight percent sodium,
b. containing ions selected from Mn, rare earths of atomic numbers 58 to 71, and alkaline earths Mg, Ca, Sr and Ba,
c. being substantially free of any catalytic loading metals,
d. being in particulate form and being dispersed throughout said matrix by cogelation of said matrix around said sieve;

3,669,874

METHOD OF INCREASING CATALYST ACTIVITY IN SOUR CRUDE CATALYTIC REFORMERS

William G. Roark, Sweeny, Tex., assignor to Phillips Petroleum Company

Filed Oct. 19, 1970, Ser. No. 81,833
Int. Cl. C10g 35/00, 39/00
U.S. Cl. 208—79 5 Claims



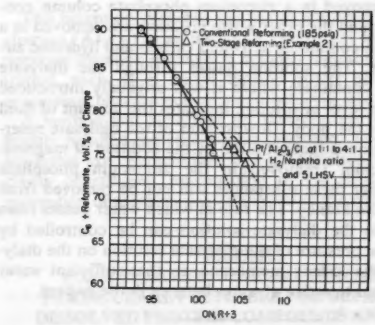
A method of operating at least two catalytic reformers which produce recycle streams of different sulfur content in which a portion of the lower sulfur content stream is recycled to the unit producing the higher sulfur content recycle steam to reduce the sulfur content of the stream recycled to the latter reformer.

3,669,875

TWO-STAGE REFORMING PROCESS

Charles J. Plank, Woodbury; Pharez G. Waldo, Wenonah, and Harry G. Doherty, Pitman, all of N.J., assignors to Mobil Oil Corporation

Filed Oct. 13, 1969, Ser. No. 865,810
Int. Cl. C10g 35/08, 39/00
U.S. Cl. 208—65 6 Claims



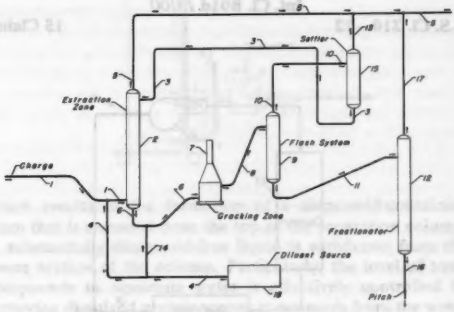
A naphtha hydrocarbon fraction is reformed in a plurality of catalytic reforming zones under conditions which are particularly selective for effecting naphthene dehydrogenation in a first stage and paraffin cyclization to form aromatics in a second stage so that below about 5 weight percent of naphthenes remain in the paraffin-rich charge passed to the second stage operated at a space velocity greater than 3 LHSV and maintained at a pressure below about 100 psig.

3,669,876

HF EXTRACTION AND ASPHALTENE CRACKING PROCESS

Charles V. Berger, Western Springs, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 18, 1970, Ser. No. 99,386
Int. Cl. C10g 17/04, 11/00
U.S. Cl. 208—87 6 Claims



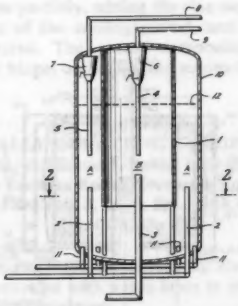
A hydrocarbonaceous black oil is subjected to HF extraction for the separation of hetero compounds and highly condensed aromatics from a less soluble raffinate. The extract phase, after separation of the raffinate, but containing HF, is subjected to cracking conditions, and preferably in the presence of a hydrogen donor. The effluent is separated to recover the HF which is recycled to the extraction zone.

3,669,877

MULTI-CHAMBER FLUIDIZED BED CATALYTIC REACTOR

Heinz G. Friedrich, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

Filed Feb. 5, 1970, Ser. No. 8,834
Int. Cl. B01j 9/20, 11/04; C10g 13/18
U.S. Cl. 208—164 3 Claims



A fluidized bed reactor, vertically divided into two or more upper compartments or chambers which are connected to each other by a lower mixing chamber, provides a fluidized bed system wherein the fluidized catalyst can be used in one of the upper chambers and then by random movement pass into the lower mixing chamber hence into another upper chamber where it can be regenerated. This compact system requires a minimum of equipment and gives a maximum of operating efficiency.

3,669,878

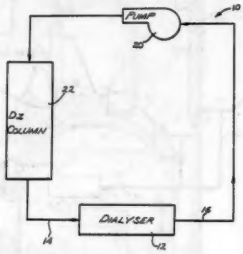
TREATMENT OF DIALYSATE SOLUTION FOR REMOVAL OF UREA

Laurence B. Marantz, Sherman Oaks, and Michael A. Greenbaum, Los Angeles, both of Calif., assignors to The United States of America as represented by the Secretary, Department of Health, Education and Welfare

Continuation of application Ser. No. 780,417, Dec. 2, 1968, now abandoned. This application Nov. 25, 1970, Ser. No. 92,864

Int. Cl. B01d *13/00*

U.S. Cl. 210—22 **15 Claims**



A treatment of dialysate solution which circulates past the membrane of an artificial kidney for removal of urea, which solution employs a combination of urease to break down urea to ammonium carbonate, and zirconium phosphate in the solution as a structure for the removal of ammonium ions.

3,669,879

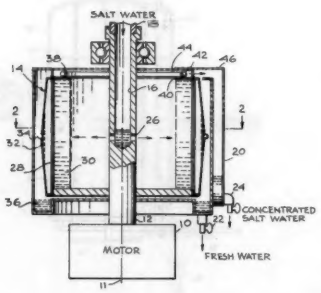
FLUID SEPARATION APPARATUS AND METHOD

Lester P. Berriman, Arcadia, Calif., assignor to Dresser Industries, Inc., Santa Ana, Calif.

Continuation-in-part of application Ser. No. 652,920, July 12, 1967, now abandoned. This application Dec. 15, 1969, Ser. No. 885,099

Int. Cl. B01d *31/00, 13/00*

U.S. Cl. 210—23 **20 Claims**



A separation process of the reverse osmosis type useful for generating fresh water by forcing salt water against a semipermeable membrance that allows only pure water to pass, which uses centrifugal forces created by rotating basket to build up a pressure head of water supplied to the basket to force water through the membrance. The pure water can be expelled by a nozzle in a direction to help rotate the basket. The membrance can be in the form of a spiral or layers extending perpendicular to the axis, to increase the membrane area within a basket of given size. The membranes can extend radially with respect to the axis of rotation, and supply and removal conduits can be positioned to continually flow water in an outward radial direction to prevent the build-up of polarization layers on the membrane surfaces.

3,669,880

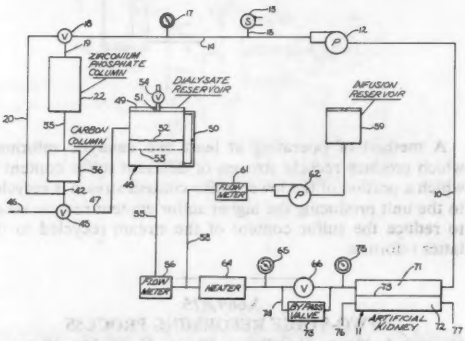
RECIRCULATION DIALYSATE SYSTEM FOR USE WITH AN ARTIFICIAL KIDNEY MACHINE

Laurence B. Marantz, Sherman Oaks, and Michael A. Greenbaum, Los Angeles, both of Calif., assignors to CCI Aerospace Corporation, Van Nuys, Calif.

Filed June 30, 1969, Ser. No. 837,714

Int. Cl. B01d *13/00;* **C02b** *1/56, 1/42*

U.S. Cl. 210—22 **11 Claims**



A recirculating dialysate system for use with an artificial kidney in which the total volume of dialysate solution is controlled. After leaving the artificial kidney, the urea in the solution is removed in a zirconium phosphate column containing urease and the other waste products are removed in a carbon column containing activated carbon and hydrated zirconium oxide. The solution passes through the dialysate reservoir (or container) where it was originally introduced and where the level of solution indicates the amount of fluid removed from the body. Downstream of the dialysate reservoir, the solution is reconstituted by the addition of magnesium and calcium (removed in the zirconium phosphate column) so that these substances will not be removed from the blood in the kidney. The rate at which water passes from the blood into the dialysate solution can be controlled by controlling the pressure of the dialysate solution on the dialysate side of the kidney membrane, so that sufficient water can be removed to arrive at water balance in the patient.

3,669,881

THIN LAYER CHROMATOGRAPHIC METHOD

Erika Cremer, Innsbruck, Austria, and Thaddaus Kraus, Vaduz, Liechtenstein, assignors to Balzers Patent-und Beteilig ungs-Aktiengesellschaft

Filed Sept. 2, 1969, Ser. No. 854,456

Int. Cl. B01d *17/06*

U.S. Cl. 210—31 **13 Claims**

A method for the chromatographic separation of substances, wherein the improvement comprises the steps

dipping or wetting one edge of the surface of a non-porous solid constituting the stationary phase into or by a liquid con-

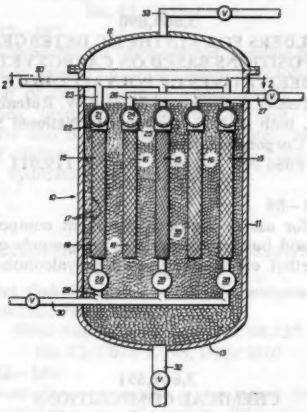
stituting the mobile phase, and making said liquid rise by spreading on said surface as a continuous liquid film.

3,669,882

METHOD OF AND APPARATUS FOR FILTERING

Gene Hirs, Birmingham, Mich., assignor to Hydromation Engineering Company, Livonia, Mich.

Filed Oct. 6, 1969, Ser. No. 863,920
Int. Cl. B01d *23/10, 39/06*
U.S. Cl. 210—33 **6 Claims**



This invention proposes the use of granular, finely divided alumina (Al_2O_3) as an insoluble, chemically inert, high temperature filtration medium in systems requiring ultra-fine filtration, such as in steam turbine power plants, chemical processing, pharmaceutical manufacturing, and the like.

A method and apparatus for utilizing this heavy and difficultly handled material is also proposed. The method and apparatus are characterized by high filtration rates, extreme clarity of effluent, rejuvenation of the medium, and the prevention of medium-contamination of the effluent.

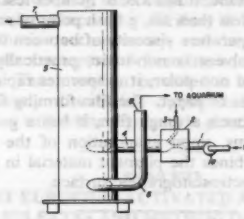
3,669,883

FOAM FLOTATION SEPARATION SYSTEM PARTICULARLY SUITABLE FOR SEPARATING DISSOLVED PROTEIN COMPOUNDS AND TOXIC METALLIC IONS FROM AQUARIUM WATER

Guido Huckstedt, Prinzenweg 22a, 813 Starnberg, and Norbert Tunze, Amselstrabe 14, 8011 Neukerferloh near Munich, both of Germany

Continuation-in-part of application Ser. No. 793,038, Jan. 22, 1969, now abandoned. This application Aug. 21, 1970, Ser. No. 66,073
Int. Cl. B03d *1/00*
U.S. Cl. 210—44 **3 Claims**

Foam flotation separation of dispersoids such as colloids and high molecular weight compounds in dispersions is carried out by drawing the dispersion into a pump which then passes it, as motive fluid, through a venturi to draw in air and effect an air emulsion-type mixture. Thereafter, the mixture passes into a separation column wherein the very small air bubbles in the emulsion are allowed to pass out of the liquid. During the passage through the liquid, dispersoid molecules are adsorbed, in the prior art manner, by the small bubbles,



which results in the formation of a dispersoid-containing foam that is removed from the top of the separation column. A substantially dispersoid-free liquid is withdrawn from the lower section of the column. Particularly, the level of toxic compounds in aquarium water is effectively controlled by removing dissolved proteinaceous compounds from the water in this manner.

3,669,884

METHYL ALKYL SILICONE GREASE CONTAINING ZINC NAPHTHENATE

John H. Wright, Elnora, N.Y., assignor to General Electric Company

Continuation-in-part of application Ser. No. 26,153, Apr. 6, 1970, which is a continuation-in-part of application Ser. No. 762,322, Sept. 16, 1968. This application June 29, 1970, Ser. No. 50,890
Int. Cl. C10m *7/50, 7/20*
U.S. Cl. 252—36 **12 Claims**

A grease composition containing a polysiloxane, the organic substituents of which are primarily methyl radicals and C_6 to C_{20} alkyl radicals, a thickener, and zinc naphthenate. The presence of the zinc naphthenate in the grease provides corrosion resistance to iron and iron alloy metal surfaces to which the grease is applied. The composition may be prepared by heating the polysiloxane and the thickener together at a temperature of about 240° C with mixing, cooling the mixture partially, adding the zinc naphthenate during the remainder of the cooling period, and then milling the resulting material. The grease composition was used to lubricate door hinges on houses and automobiles.

3,669,885

ELECTRICALLY INSULATING CARRIER PARTICLES

John F. Wright, and Bruce J. Rubin, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 3, 1970, Ser. No. 8,416
Int. Cl. G03g *9/00*
U.S. Cl. 252—62.1 **6 Claims**

Carrier particles useful in developing electrostatic charge patterns are provided with a thin layer in insulating material by glow discharge treatment.

3,669,886

LIQUID DEVELOPER FOR ELECTROSTATOGRAPHY

George E. Kosel, Park Ridge, N.J., assignor to Philip A. Hunt Chemical Corporation, Palisades Park, N.J.

Continuation-in-part of application Ser. No. 397,638, Sept. 18, 1964. This application Sept. 11, 1968, Ser. No. 767,031
Int. Cl. G03g *9/04*
U.S. Cl. 252—62.1 **3 Claims**

A liquid electrostatographic image developer composed of the following five constituents; a petroleum fraction paraf-

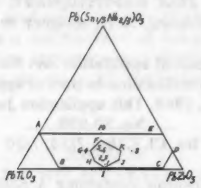
finic solvent, a solid film-forming fixing agent, a solid dispersant, a solid charge director, and a submicron solid electroscopic pigment material. The fixing agent and the dispersant are dissolved in the solvent. The charge director is carried by the solvent being either dispersed or dissolved therein. The pigment material is insoluble in the solvent and is dispersed therein. The solvent evaporates at least as fast as kerosene and slower than hexane; it has a K.B. number less than 35, a dielectric constant less than 3½, a flash point of at least 100° F, and a room temperature viscosity of between 0.5 and 2.5 centipoises. The solvent is non-toxic, practically odorless, highly resistant, and non-polar; it evaporates rapidly slightly below the char point of paper. The film-forming fixing agent is non-tacky and forms a tough film; it has a good solvent release and it forms, upon evaporation of the solvent, a coherent film that binds the pigment material in place, and bonds well to an electrostatographic surface.

3,669,887

PIEZOELECTRIC CERAMIC COMPOSITIONS

Masamitsu Nishida, Osaka-shi, Osaka-fu, and Hiromu Ouchi, Toyonaka-shi, Osaka-fu, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed July 30, 1969, Ser. No. 846,037
Claims priority, application Japan, Aug. 8, 1968, 43/56898. The portion of the term of the patent subsequent to Sept. 15, 1987, has been disclaimed.
Int. Cl. C04b *35/46, 35/48*
U.S. Cl. 252—62.9 7 Claims



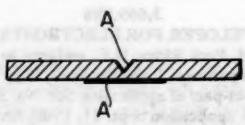
Piezoelectric ceramic compositions having very high mechanical quality factors and electromechanical coupling coefficients and high stabilities in resonant frequency and mechanical quality factor over a wide temperature range comprising the solid solutions defined by the lines connecting points A, B, C, D and E and the lines connecting points F, G, H, I, J and K of the diagram of FIG. 2 and further containing from 0.1 to 5 percent of MnO_2.

3,669,888

ELECTRICAL INSULATING MATERIALS BASED ON OLEFIN POLYMERS

Franz Wuerstlin; Franz Feichtmayr, both of Ludwigshafen, and Heinz Eilingsfeld, Frankenthal, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed June 11, 1969, Ser. No. 832,107
Claims priority, application Germany, June 14, 1968, P 17 65 583.3
Int. Cl. C08f *45/60;* H01b *3/18*
U.S. Cl. 252—63.2 3 Claims



Electrical insulating materials based on olefin polymers and containing agents for increasing their electric strength. The electrical insulating materials according to the invention contain anilines bearing special substituents as the agents for increasing electric strength.

3,669,889

GRANULAR CERAMIC HEAT CARRIER AND METHOD FOR MANUFACTURE THEREOF

Diomid Ilich Juzvuk, Sverdlovskoi oblasti, ul. Gagarina 4, kv. 4, and Valentin Vasilievich Saparov, Sverdlovskoi oblasti, ul. Gagarina, 4, kv. 2, both of Bogdanovich Sverdlovskoi oblast, U.S.S.R.

Filed Dec. 20, 1968, Ser. No. 785,764
Int. Cl. C04b *35/10;* C09k *3/02*
U.S. Cl. 252—71 10 Claims

A granular ceramic heat carrier for use in conjunction with chemical processes, the granules of which heat carrier contain the oxides of aluminum, silicon, chromium and iron, and a method of manufacturing said granular ceramic heat carrier comprising preparing a mix from alumina, fire clay and chrome are powders and a binder.

3,669,890

BUILDERS FOR SYNTHETIC DETERGENT COMPOSITIONS BASED ON CARBOXYETHYL DERIVATIVES OF POLYALCOHOLS

Martin M. Tessler, Edison, and Morton W. Rutenberg, North Plainfield, both of N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

Filed Feb. 25, 1971, Ser. No. 119,011
Int. Cl. C11d *7/26*
U.S. Cl. 252—89 3 Claims

Builders for use in synthetic detergent compositions are described; said builders comprising compounds of the class of carboxyethyl ethers of selected polyalcohols and their salts.

3,669,891

CHEMICAL COMPOSITIONS

John Malcolm Greenwood, Arlington, Mass., and David Howard Stokes, Llanllwch, Carmarthen, Wales, assignors to Lever Brothers Company, New York, N.Y.

Filed May 27, 1970, Ser. No. 41,105
Claims priority, application Great Britain, May 30, 1969, 27,463/69
Int. Cl. C11d *17/00*
U.S. Cl. 252—90 10 Claims

Cleansing compositions adapted to emit visible light during use, and which are thereby capable of conveying useful information to the user, are disclosed.

3,669,892

AEROSOL SPRAY CLEANER-POLISH

Roger L. Abler, White Bear Lake, and David L. Strand, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 29, 1969, Ser. No. 795,081
Int. Cl. C11d *17/00*
U.S. Cl. 252—90 4 Claims

An aerosol spray cleaner-polish composition having improved gloss and rebuff characteristics which provides a dry readily visible non-plugging foam. At least about 18 parts by weight of certain compatible detergents per 100 parts of non-volatile solids are included in aerosol floor cleaning and polishing compositions of the type comprising aqueous styrene and/or acrylic film forming polymer emulsions.

3,669,893

INHIBITING AGENTS, WASHING COMPOSITIONS AND SOLUTIONS CONTAINING THE SAME, AND PROCESSES FOR USING THE SAME

Fredric B. Clarke, Watertown, Mass., and John W. Lyons, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of application Ser. No. 746,320, July 22, 1968, now abandoned. This application Feb. 5, 1971, Ser. No. 113,032

Int. Cl. C11d 7/06

U.S. Cl. 252—156 2 Claims

This invention relates to novel methods for washing rigid materials such as glass bottles with a novel washing solution containing a novel inhibiting agent, which effects a synergistic inhibiting action, consisting of a combination of (1) a gluconate material such as sodium gluconate, (2) an aminophosphonate such as amino tri(methylene phosphonic acid) and (3) an alkylidene diphosphonic acid such as 1-hydroxy, 1-ethylidene diphosphonic acid.

3,669,894

PREPARATION OF HIGH TEST CALCIUM HYPOCHLORITE

John P. Faust, Hamden, Conn., assignor to Olin Corporation

Filed Sept. 2, 1970, Ser. No. 69,130

Int. Cl. C01b 11/06

U.S. Cl. 252—187 3 Claims

Calcium hypochlorite compositions, suitable for bleaching and sanitation uses, are provided which have lowered rates of propagation of decomposition when heated. These novel compositions contain 75 to 82 percent of calcium hypochlorite and 6 to 12 percent of water, balance usual diluents of calcium hypochlorite including calcium chloride, carbonate, hydroxide and sodium chloride.

3,669,895

SODIUM HYDROSULFITE STABILIZATION COMPOSITION

Shiri Shastri, Oakville, Ontario, Canada, assignor to Virginia Chemicals Inc., Portsmouth, Va.

Filed Aug. 31, 1970, Ser. No. 68,537

Int. Cl. C01b 17/98; D21c 9/10

U.S. Cl. 252—188 11 Claims

The present discovery entails a new means for stabilizing mixtures, containing primarily sodium dithionite, from spontaneous decomposition and "ignition" by the action of water. Specifically, the invention comprises stabilization of sodium hydrosulfite against spontaneous decomposition in the presence of water, using effective quantities of additives, which still in no way lessen the bleaching activity that would be developed by an equivalent quantity of sodium hydrosulfite. The stabilizing agents consist of oxalic acid and a water soluble inorganic carbonate. This mixture can be further improved as to stabilization and bleaching effect by the addition of borax ($Na_2B_4O_7 \cdot 10\ H_2O$). The bleaching effect may be improved by adding a water soluble inorganic sulfite.

3,669,896

INORGANIC WHITE PIGMENTS CONTAINING OPTICAL BRIGHTENERS AND PROCESS FOR THEIR MANUFACTURE

Erich Preininger, Riehen, Switzerland, and Dieter Ging, Huesingen, Germany, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Dec. 2, 1969, Ser. No. 881,627

Claims priority, application Switzerland, Dec. 5, 1968, 18198/68

Int. Cl. C09k 1/02; C09c 3/00

U.S. Cl. 252—301.3 W 8 Claims

The invention concerns a process for the manufacture of inorganic white pigments containing optical brighteners, characterized in that, in an aqueous suspension of an inorganic white pigment which contains a dispersion of at least one optical brightener which is sparingly soluble in water, dispersed by means of non-ionic surface-active agents, property-improving auxiliary substances for such pigments are precipitated or adsorbed on these pigments in a manner which is in itself known by admixing the property-improving auxiliary or admixing the components for the formation of such a property-improving auxiliary if several components for its formation are necessary, and the pigments treated in such manner are separated from the aqueous phase, washed and dried. The invention provides a valuable method for homogeneously distributing optical brightening agents in combination with white pigments in plastics.

3,669,897

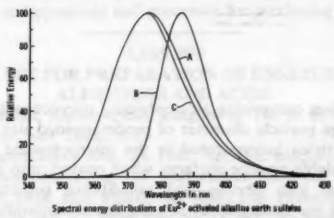
DIVALENT EUROPIUM ACTIVATED ALKALINE EARTH METAL SULFATES AND METHOD OF PREPARATION

Anselm Wachtel, Parlin, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

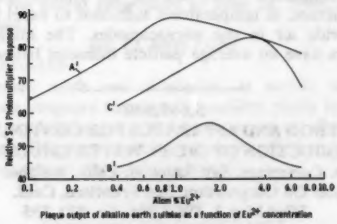
Filed Nov. 14, 1969, Ser. No. 876,765

Int. Cl. C09k 1/22; C01f 11/46

U.S. Cl. 252—301.4 S 4 Claims



Spectral energy distributions of Eu^{2+} activated alkaline earth sulfates



Plaque output of alkaline earth sulfides as a function of Eu^{2+} concentration

Divalent europium activated alkaline earth metal sulfates wherein the metal is at least one of calcium, barium, or strontium, and europium is present in atom percent of the alkaline-earth metal of from about 0.4 to 7. The compositions emit very efficiently in the near-ultraviolet upon short wavelength ultraviolet excitation. A preferred mode of preparing the compositions is set forth whereby the composition is precipitated from solution.

3,669,898

FOAM PROTECTION OF PLANT LIFE

James W. Butler, Stittsville, Ontario, Canada, assignor to Laurentian Concentrates Limited, Ontario, Canada

Filed Feb. 7, 1969, Ser. No. 797,689

Claims priority, application Canada, Dec. 12, 1968, 037,610

Int. Cl. A01g 13/00

U.S. Cl. 252—307 17 Claims

There is described a foam concentrate from which foams to be used to protect vegetation, for example from frost can be produced. The concentrate comprises a neutralized protein hydrolysate stabilized with specified proportions of iron and lignosulfonate. A method of protecting vegetation using the above foams is also described.

3,669,899

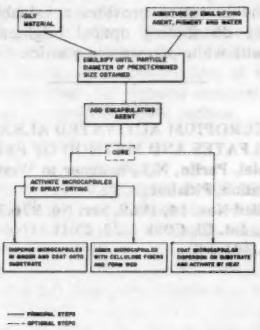
MICROCAPSULAR OPACIFIER SYSTEM

Anthony E. Vassiliades, Deerfield; Edward F. Nauman, Lake Forest, and Shrenik Shroff, Chicago, all of Ill., assignors to U. S. Plywood-Champion Papers Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 786,337, Dec. 23, 1968, now Patent No. 3,585,149. This application Apr. 29, 1969, Ser. No. 820,267

Int. Cl. B01j *13/02*; B44d *1/02*; C09d *5/00*

U.S. Cl. 252—316 42 Claims



Opacifiers comprising air-containing microcapsules having an average particle diameter of predetermined size with pigment particles incorporated in the microcapsular structure provide highly opaque surfaces when coated onto and/or incorporated into fibrous and non-fibrous substrates. The opacifiers are produced by heating liquid-containing precursor microcapsules, which contain the pigment particles in their structure, at temperatures sufficient to expel the liquid and provide air in the microcapsules. The microcapsular opacifiers have an average particle diameter below about 2 microns.

3,669,900

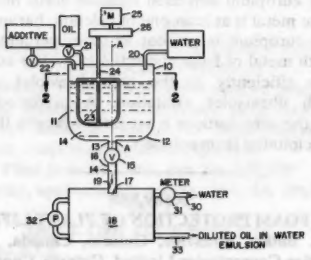
METHOD AND APPARATUS FOR CONTINUOUS PRODUCTION OF OIL-IN-WATER EMULSIONS

Lowell O. Cummings, San Anselmo, Calif., assignor to Pacific Vegetable Oil Corporation, San Francisco, Calif.

Filed May 2, 1969, Ser. No. 821,235

Int. Cl. B01d ; B01f *9/08*, *7/00*

U.S. Cl. 252—359 C 5 Claims



A system and device for producing an oil-in-water emulsion of high water-insoluble liquid content, e.g., containing 70 percent to about 95 percent of such liquid or oil. An initial receptacle receives streams of oil, water, and emulsifying agent, while beater means subdivides the oil component and forms such oil-in-water emulsion. An exit portion or chamber and an aperture therein are connected by a conduit to a second or dilution receptable, wherein predetermined amounts of dilution water are introduced and thoroughly admixed with the emulsion. The continuous process for forming such an emulsion includes effecting with the beater a thin, continuous water phase around very small particles of oil, continuously withdrawing a primary thick emulsion to a dilution zone, and continuously diluting it to a desired water or dilution liquid content.

3,669,901

CORROSION INHIBITOR COMPOSITION CONTAINING ZINC, SULFAMATE, AND PHOSPHATE IONS

William Bruce Murray, 929 Terraine Avenue, Long Beach, Calif.

Original application Sept. 8, 1970, Ser. No. 76,221, now abandoned , Continuation-in-part of application Ser. No. 892,842, May 5, 1969, now abandoned. Divided and this application Oct. 22, 1970, Ser. No. 83,203

Int. Cl. C23f *11/16*, *11/18*

U.S. Cl. 252—387 9 Claims

A liquid corrosion inhibitor and method designed for use by water treatment plants for the control of corrosion of municipal, industrial, commercial and domestic metal piping systems, wherein, as the inhibitor is economically added to the flowing water supply in minute dosages, it passivates the surface of the metal piping as it deposits a self-controlled film of insoluble zinc phosphate. One of the preferred inhibitors is "zinc-sulfamate-orthophosphate." To be effective, the pH must be controlled to within the range of 5–9.

3,669,902

DICYCLOHEXYLTHIOUREA CORROSION INHIBITOR COMPOSITION

Robert Eugene Hirner, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Sept. 22, 1970, Ser. No. 74,491

Int. Cl. C23f *11/16*; C23g *1/06*

U.S. Cl. 252—391 2 Claims

Dicyclohexylthiourea can be provided in a liquid composition ready for addition to an acid bath as a corrosion inhibitor. The highly insoluble dicyclohexylthiourea is compounded for this purpose with dimethylacetamide and a specific wetting agent.

3,669,903

CATALYTIC CRACKING PROCESS

Jean M. Bourguet, and Francis D. Hart, both of Le Vesinet, France, assignors to Mobil Oil Corporation (formerly Socony Mobil Oil Company, Inc.)

Continuation of application Ser. No. 471,785, June 24, 1965, now abandoned, and 262,258, Mar. 1, 1963, now abandoned, and 62,870, Oct. 17, 1960, now Patent No. 3,193,493. This application June 16, 1966, Ser. No. 557,910. The portion of the term of the patent subsequent to July 7, 1981, has been disclaimed.

Int. Cl. B01j *11/40*

U.S. Cl. 252—455 2 Claims

Hydrocarbon conversion catalysts comprising crystalline aluminosilicates containing rare earths and other metals from Groups IB through VIII of the Periodic Table, and having a low alkali metal content. They are useful in hydrocarbon conversion processes such as cracking, hydrocracking hydrodesulfurization, alkylation, dehydrogination, and hydrogenation.

3,669,904

PARTICLES FEATURING GAMMA ALUMINA

Edward B. Cornelius, Swarthmore, Pa., and David W. Koester, Wilmington, Del., assignors to Air Products and Chemicals, Inc., Philadelphia, Pa.

Filed May 28, 1970, Ser. No. 41,632

Int. Cl. B01j *11/06*, *11/08*, *11/32*

U.S. Cl. 252—465 3 Claims

A propensity to form gummy mixtures with water is a troublesome characteristic of a technical grade of boehmite, said power comprising a total ignition loss of about 25 percent, a volatile alcohol content corresponding to less than 1 percent carbon, minor amounts of amorphous alumina and a

major amount of alpha mono hydrate. A portion of the technical boehmite is mildly calcined at 400°–500° C. for at least 15 minutes to provide a dehydrated alumina powder, which then mixed with a significantly larger amount of the uncalcined technical grade of boehmite, can be mixed with water for providing a plastic mixture suitable for shaping into catalyst particles. The catalyst particles are calcined above about 600° C. for more than 1 hour in the presence of steam to form attrition resistant particles of gamma alumina having the pore size distribution desirable in certain types of catalysts.

3,669,905

ELECTRICAL CONDUCTORS

Ian Leitch McDougall, and Michael Charles Lock, both of Sutton Coldfield, England, assignors to Imperial Metal Industries (Kynoch) Limited, Birmingham, England

Filed May 6, 1970, Ser. No. 35,277

Claims priority, application Great Britain, May 13, 1969, 24,270/69; Sept. 26, 1969, 47,555/69

Int. Cl. H01b *1/02*

U.S. Cl. 252—512 **10 Claims**

An electrical conductor comprising at least one core having superconducting properties and embedded in a matrix of a plastic material, said core comprising at least one superconductor filament having a maximum thickness of five microns, preferably one micron. Also methods of manufacture of such a conductor.

3,669,906

CATALYST FOR PURIFICATION OF EXHAUST GASES FROM MOTOR VEHICLES AND INDUSTRIAL PLANTS

Edgar Koberstein, Alzenau, and Eduard Lakatos, Hurth-Hermulheim, both of Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt Vormats Roessler, Frankfurt (Main), Germany

Continuation-in-part of application Ser. No. 581,163, Sept. 22, 1966, now abandoned. This application Aug. 19, 1970, Ser. No. 64,957

Claims priority, application Germany Sept. 24, 1965, D 48276

Int. Cl. B01j *11/06, 11/22*

U.S. Cl. 252—465 **19 Claims**

There is provided a catalyst for the purification of exhaust gases from industrial processes and motor vehicles by combustion of oxidizable impurities contained therein to carbon dioxide and water and removal of nitrogen oxide at elevated temperatures in contact with air consisting essentially of a calcined mixture of eta and gamma aluminum oxide and heavy metal oxide compounds the element chromium and at least one other heavy metal selected from the group consisting of nickel or copper with nickel, the quantity of such heavy metal oxide compounds being 55 to 90 weight percent, the molar proportion of the chromium to the other heavy metal being between about 1:0.5 and 1:2.5 calculated as oxides and the majority of the particles of the heavy metal oxide compounds being of a size of from 0.5 to 5 μ, whereby the heavy metal oxide compounds have been formed by precipitating chromium from a solution of ammonium bichromate with a soluble salt of said other heavy metal or metals, and whereby said calcining of said mixture having been done at 400°–800° C., preferably in an oxygen-containing atmosphere.

3,669,907

SEMICONDUCTIVE ELEMENTS

Tadao Kohashi, Yokohama, and Kazunobu Tanaka, Kawasaki-shi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

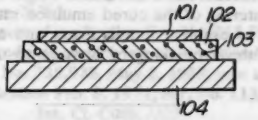
Filed Dec. 1, 1967, Ser. No. 687,229

Claims priority, application Japan, Dec. 7, 1966, 41/80696

Int. Cl. H01b *1/06;* **C03c** *17/00*

U.S. Cl. 252—518 **4 Claims**

Semiconductive elements having a specific resistivity of the semiconductor range (that is, 10^5 to 10^8 ohm-cm) which have an ohmic resistance even in an considerably high electric field and are highly durable in adverse physical and atmospheric conditions, which are manufactured by heating a mixture of powder of vitreous binding material and powder of semiconductive metal oxide dispersed in the former



powder. Further, the dielectric strength and the uniformity of resistivity of said semiconductive elements can be improved by adding, to the mixture, powder of an oxide whose conductivity is much higher than that of said semiconductive metal oxide.

3,669,908

ALKADIENYL PYRIDINES AND PYRAZINES AS PERFUMES

John B. Hall, Rumson, N.J., assignor to International Flavors & Fragrances, Inc., New York, N.Y.

Filed Sept. 2, 1969, Ser. No. 854,787

Int. Cl. C11b *9/00*

U.S. Cl. 252—522 **3 Claims**

Novel alkadienyl substituted pyridines and pyrazines, perfume and fragrance compositions containing such substituted pyridines and pyrazines and processes for producing same.

3,669,909

CATALYST FOR PREPARATION OF UNSATURATED ALDEHYDES AND ACIDS

Jamal S. Eden, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Original application Aug. 28, 1967, Ser. No. 663,557, which is a continuation-in-part of application Ser. No. 483,862, Aug. 30, 1965, now Patent No. 3,401,198. Divided and this application Feb. 27, 1970, Ser. No. 18,397. The portion of the term of the patent subsequent to June 24, 1986, has been disclaimed.

Int. Cl. B01j *11/82*

U.S. Cl. 252—435 **1 Claim**

Unsaturated acids and aldehydes, as acrylic acid and acrolein, are prepared together in excellent yields by the oxidation of an olefin as propylene in the presence of a catalyst containing a IIA metal molybdate, as strontium molybdate, tellurium oxide and phosphorus pentoxide.

3,669,910

MANUFACTURE OF FOAMS

Geoffrey English, and Brian Arthur Mountfield, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of application Ser. No. 732,033, May 27, 1968, now abandoned. This application Feb. 22, 1971, Ser. No. 117,797

Int. Cl. C08j *1/18*

U.S. Cl. 260—2.5 N **17 Claims**

Manufacture of rigid polyamide foams by producing a foam of molten polyamide in presence of a non-ionic surface active agent, especially an alkylene oxide condensate with an alkanol, alkylamine or alkylphenol containing 10 to 20 carbon atoms, and then cooling below the melting point to solidify the polyamide.

3,669,911

PROCESS AND COMPOSITIONS FOR MAKING POROUS LOW DENSITY THERMOSET RESINS FROM WATER-IN-RESIN EMULSIONS

Daniel J. Najvar, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sept. 26, 1969, Ser. No. 861,460

Int. Cl. C08g *53/08;* **C08f** *47/08*

U.S. Cl. 260—2.5 N **30 Claims**

The difficulty in readily removing water from cured water-in-thermosettable resin emulsions has been overcome by ad-

ding to the emulsion from about 0.005 to 10 parts per 100 parts of emulsion of a polyalkylene oxide block copolymer, nonionic surfactant wherein the hydrophobe portion of the nonionic surfactant has a molecular weight of at least about 1,000. Dewatering of the cured emulsion may be readily effected even at ambient temperatures and at elevated temperatures without cracking or damage to the porous thermoset resin.

3,669,912

METHOD OF MAKING DEEP OCEAN BUOYANT MATERIAL

Ray F. Hinton, Davidsonville, Md., assignor to The United States of America as represented by the Secretary of the Navy

Continuation-in-part of application Ser. No. 409,032, Dec. 4, 1964, now abandoned. This application May 24, 1968, Ser. No. 747,052

Int. Cl. C08j *1/14;* **B01j** *13/02*

U.S. Cl. 260—2.5 B **3 Claims**

A buoyant, nonabsorbent, high-strength, low-density, bulk filler material which can be readily mixed and cast for use in the displacement of sea water at great ocean depths. The material of varying pellet-size is formed by dropping epoxy resin into a bed of microspheres under ambient conditions. The droplets absorb the microspheres thereby forming uncured pellets, the size of which is controlled by the size of the droplet. They are then cured for several hours at an elevated temperature.

3,669,913

SOLUTION COMPOSITIONS OF SILOXANE-OXYALKYLENE COPOLYMERS AND AMINE CATALYSTS AND USE FOR MANUFACTURE OF POLYURETHANE FOAM

Edward Lewis Morehouse, New City, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 842,751, May 5, 1969, now abandoned , which is a continuation-in-part of application Ser. No. 131,765, Apr. 6, 1971; said 842,751, May 5, 1969, which is a division of application Ser. No. 573,133, Aug. 12, 1966, now Patent No. 3,505,377, dated Apr. 7, 1970. This application Nov. 23, 1970, Ser. No. 92,145

Int. Cl. C08g *22/46, 31/32;* **C09k** *3/00*

U.S. Cl. 260—2.5 AH **16 Claims**

A solution composition, particularly useful for the manufacture of flexible polyether urethane foam, is provided comprising water, a hydrolytically stable siloxane-oxyalkylene block copolymer, an amine polyurethane-foaming catalyst and a water soluble, silicon-free organic surfactant which is capable of raising the cloud point of the solution. Suitable organic surfactants include those having the general formula, $C_9H_{19}C_6H_4(OC_2H_4)_eOH$, wherein e represents any number from about 9 to about 20 inclusive. The compositions may also contain water soluble organic solvents. The presence of the organic surfactant serves to protect the solution from physical separation when subjected to adverse temperature conditions which may be encountered during shipment or storage. A process for the manufacture of polyurethane foam is also provided in which the foam-forming reaction mixture comprises a polyether polyol, a polyisocyanate and the aforesaid solution composition.

3,669,914

PROCESS FOR PREPARING VINYLIDENE CHLORIDE POLYMERS

Owen L. Stafford, Midland, and Robert K. Tarzwell, Beaverton, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of application Ser. No. 813,343, Apr. 3, 1969, now abandoned , which is a continuation-in-part of application Ser. No. 620,217, Mar. 1, 1967, which is a continuation-in-part of application Ser. No. 329,992, Dec. 12, 1963, now abandoned. This application Aug. 13, 1970, Ser. No. 63,656

Int. Cl. C08f *1/13, 3/28*

U.S. Cl. 260—17 R **3 Claims**

This invention is concerned with a process for polymerizing vinylidene chloride monomer in a modified emulsion polymerization system to produce readily isolatable, particulate, high density polymer at a rate significantly faster than achieved by conventional suspension type polymerization. The process utilizes an oil phase of vinylidene chloride monomer dispersed in an aqueous phase containing certain water-soluble, free-radical polymerization catalyst, cellulose ethers, wetting agents and coagulants.

3,669,915

FLOCCULANTS FROM STARCH GRAFT COPOLYMERS

Duane A. Jones, Minneapolis, Minn.; George F. Fanta, and Robert C. Burr, both of Peoria, Ill., assignors to The United States of America as represented by the Secretary of Agriculture

Filed Sept. 8, 1970, Ser. No. 70,491

Int. Cl. B03d *3/06;* **C08f** *1/08, 29/00*

U.S. Cl. 260—17.4 GC **10 Claims**

Highly active flocculants for removing siliceous wastes and other finely divided solid suspensions from water are produced from starch by graft copolymerization with a cationic monomer having quaternary ammonium substituents.

3,669,916

SOLUTION OF A GRAFT COPOLYMER OF CELLULOSE

Osakazu Nakao; Saburo Nakagawa; Juichi Hirose; Shigeyuki Yamazaki; Takashi Amano; Toshio Nakamura, and Hiroyuki Yamamoto, all of Shizuoka Prefecture, Japan, assignors to Tomoegawa Paper Manufacturing Company Limited, Chuo-ku, Tokyo, Japan

Filed June 11, 1969, Ser. No. 832,452

Int. Cl. C08c *21/32*

U.S. Cl. 260—17.4 GC **1 Claim**

The present invention is directed to a solution of a graft copolymer of cellulose comprising a polar organic solvent or a mixed solvent containing a polar or organic solvent, nitrogen dioxide and a graft copolymer of cellulose. Such solution is capable of dissolving cellulose and various kinds of polymers.

3,669,917

COPOLYAMIDE FIBERS OF REDUCED STICKINESS CONTAINING A NORMAL PARAFFIN

Satoshi Ando; Yusaku Tanaka, both of Osaka; Minoru Kojima, and Kyoichi Fujimura, both of Osaka-fu, all of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan and Snia Viscosa Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

Continuation-in-part of application Ser. No. 601,756, Dec. 14, 1966, now abandoned. This application July 27, 1970, Ser. No. 58,457

Claims priority, application Japan, Dec. 23, 1966, 40/79725

Int. Cl. C08g *20/38*

U.S. Cl. 260—78 R **4 Claims**

A copolyamide fiber of reduced stickiness which consists essentially of a fibers forming copolyamide consisting of 70 –

95 percent by weight of polycaproamide polyhexamethylene adipamide and 30 – 5 percent by weight of at least one of comonomers copolymerizable therewith and from 0.01 to 5 percent by weight, based on the copolyamide, of at least one normal paraffin selected from the group consisting of methane series hydrocarbons represented by the formula C_nH_{2n+2} wherein n is an integer of from 14 to 70, dispersed homogeneously throughout said copolyamide.

3,669,918

BITUMINOUS COMPOSITIONS CONTAINING HIGH MOLECULAR WEIGHT ETHYLENE/PROPYLENE COPOLYMER

Charles F. Raley, Jr., Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed June 18, 1969, Ser. No. 834,543
Int. Cl. C08f *45/52*; C09d *3/60*
U.S. Cl. 260—28.5 **6 Claims**

Bituminous compositions having improved impact strength at both high and low temperatures comprise asphalt and an ethylene/propylene copolymer having a molecular weight from about 50,000 to about 100,000.

3,669,919

POLYACRYLONITRILE PROCESS

Antony E. Champ, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.

Filed June 16, 1969, Ser. No. 833,540
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 AN **6 Claims**

An improved method of producing a polyacrylonitrile extrusion solution particularly suited for the production of shaped articles, especially fibers, which eliminates several process steps previously associated with the polymerization of the acrylic polymer and the subsequent formation of the extrusion solution. The method is particularly applicable to high acrylic polymers such as those containing more than about 85 percent acrylonitrile wherein the polymers are formed by aqueous suspension polymerization methods. The wet acrylic polymer produced is directly used in an extrusion process by solvating the polymer with a lower alkyl nitrile, such as acetonitrile, to form the extrusion solution. The solvation is accomplished by adjusting the polymer water content to about 1 to 40 percent by weight of the polymer, adding sufficient acetonitrile to provide a polymer-solvent mixture of 20 to 70 percent of polymer solids by weight and subsequently heating the mixture under at least autogeneous pressure to above the atmospheric boiling point of the solvent to form a homogeneous polymer solution.

3,669,920

CARBON FIBER-REINFORCED POLYURETHANE COMPOSITES

Geoffrey Arthur Haggis, Manchester; Michael Edward Benet Jones, and Michael Horace Knight, both of Runcorn, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 23, 1970, Ser. No. 22,065
Claims priority, application Great Britain, Mar. 27, 1969, 16,048/69
Int. Cl. C08g *51/10*
U.S. Cl. 260—37 N **6 Claims**

Fiber reinforced synthetic resin composites suitable for use e.g. in aerofoil blades for compressors, turbines and the like in which the fibers are carbonized fibers and the resin is the product of curing an isocyanate terminated prepolymer obtained by a reacting a polyisocyanate with a polyol at least one of which contains a cyclic group in a chain between two functional (i.e. hydroxyl or isocyanate) groups, and has a heat distortion temperature of at least 50° C., and the fibers form from 20 to 75 percent by weight of the composite.

3,669,921

COPOLYESTER MELT ADHESIVE

Joseph W. Droke; James E. Hataway, and Nicholas C. Russin, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of application Ser. No. 845,554, July 28, 1969, now abandoned , which is a continuation-in-part of application Ser. No. 725,938, May 1, 1968, now abandoned. This application Feb. 8, 1971, Ser. No. 113,595
Int. Cl. C08k *1/02*
U.S. Cl. 260—40 R **21 Claims**

Copolyesters useful as melt adhesives in the bonding of fabrics, metal, glass, wood, rubber, plastic sheets and other products to produce a bond which will resist the action of heat, steam, dry cleaning solvents and the like, said copolyester being derived from (1) terephthalic acid, (2) adipic acid, (3) ethylene glycol, and (4) 1,4-butanediol or derivatives of these four components. These copolyesters are advantageously improved by the incorporation therein of specific amounts of either sodium stearate or titanium dioxide.

3,669,922

PROCESS FOR THE PREPARATION OF COLORED POLYMER POWDERS OF CONTROLLED CHARGE AND PRINTING CHARACTERISTICS

Raymond C. Bartsch, and Frank Lerman, both of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed May 21, 1970, Ser. No. 39,513
Int. Cl. C08f *1/86*; G03g *9/02*
U.S. Cl. 260—41 R **18 Claims**

A process is provided for preparing colored polymer powders with controlled charge and printing characteristics when used as toners in electrostatic printing. The process comprises a controlled heating, melting, and dispersion of a polymer in the presence of water and surfactant. The polymer contains a coloring agent and a specially selected charge-directing agent, such as a nigrosine dye or a metal powder. Colored powders can thus be obtained composed of spherical particles which have exceptionally fine printing characteristics, when used as toners in electrostatic printing processes, and which have controlled average size and size distribution.

3,669,923

SELF-EXTINGUISHING THERMOPLASTIC MOLDING COMPOSITIONS

Hans Hintz, Ludwigshafen(Rhine), Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Germany

Continuation of application Ser. No. 643,821, June 6, 1967, now abandoned. This application Oct. 26, 1970, Ser. No. 84,178
Claims priority, application Germany, June 23, 1966, P 16 69 652.9
Int. Cl. C08f *45/14*, *45/62*
U.S. Cl. 260—41 C **10 Claims**

Thermoplastic molding compositions containing a styrene polymer and, as flame retardants, an organic chlorine compound, an organic bromine compound and an iron complex of a nitrosonaphthol dye.

3,669,924

STABILIZED POLYVINYL NITRATE AND PROCESS

Eduard Daume, and Jurg Breitenmoser, both of Zurich, Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed Sept. 11, 1969, Ser. No. 857,234
Claims priority, application Switzerland, Sept. 19, 1968, 14042/68
Int. Cl. C08f *1/92*
U.S. Cl. 260—45.9 R **12 Claims**

A novel stabilized polyvinylnitrate and a process for the

production thereof including the precipitation of the compound from organic solutions containing same.

3,669,925

THERMALLY STABLE DYEABLE POLYESTERS HAVING IMPROVED DYED LIGHTFASTNESS

Henry L. King; Eugene L. Ringwald, both of Cary, N.C., and James C. Randall, Jr., Bartlesville, Okla., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of application Ser. No. 824,092, May 13, 1969, and a continuation-in-part of 789,528, Jan. 7, 1969, now abandoned, and a continuation-in-part of 873,333, Nov. 13, 1969. This application Apr. 28, 1970, Ser. No. 32,676. The portion of the term of the patent subsequent to June 6, 1989, has been disclaimed.

Int. Cl. C08g *17/08*

U.S. Cl. 260—45.95 9 Claims

Modified polyester filaments having over conventional polyester filaments, improved inherent thermal stability in the presence of oxygen and inherent disperse dye uptake, without the significant loss in dye lightfastness typical of such modified filaments, are produced from terephthalic acid; glycols; small amounts of mixtures of compounds having a typical general formula: R-O[G-O]$_x$—H, where R is an alkyl group containing an average of from about 8–20 carbon atoms; G is a hydrocarbon radical selected from the group consisting of ethylene, propylene and isomers thereof, butylene and isomers thereof, and mixtures of the above; and x has an average value of from 8–20, and is about equal to or greater than R; small amounts of manganous ion; and small amounts of a hindered phenol preferably selected from the group consisting of 4, 4′-butylidenebis (6-t-butyl-m-cresol) and 2, 2′-butylidenebis (6-t-butyl-m-cresol). Polyfunctional chain-branching agents in amounts up to about 0.7 mole percent, based on the weight of the dicarboxylic acid or ester-forming derivative thereof, may be added, whereby the polymer, with the chain terminators described above, can be polymerized to higher molecular weights by ordinary polymerization techniques.

3,669,926

STABILIZING PLASTIC WITH BORATED DIHYDROXYDIPHENYL SULFIDE

Henryk A. Cyba, Evanston, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of application Ser. No. 462,754, June 9, 1965. This application June 21, 1967, Ser. No. 647,643

Int. Cl. C08f *45/58*

U.S. Cl. 260—45.95 11 Claims

Stabilizing plastic by incorporating therein a minor but stabilizing concentration of borated dihydroxydiphenyl sulfide.

3,669,927

POLYCONDENSING BIS(HYDROXYALKYL) THEREPHTHALATES IN THE PRESENCE OF SMALL AMOUNTS OF A GERMANIUM COMPOUND AND A STERICALLY HINDERED BISPHENOL OR TRISPHENOL

Iwao Terasaki; Yoshio Kimura; Toshio Okamoto; Tsukasa Shima; Mitsuo Kohno, and Kazuyuki Kitamura, all of Nobeokashi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Kitaku, Osaka, Japan

Filed Jan. 5, 1970, Ser. No. 823

Claims priority, application Japan, Jan. 27, 1969, 44/5276; Mar. 13, 1969, 44/18843

Int. Cl. C08g *33/10*

U.S. Cl. 260—47 C 4 Claims

Producing of polyesters by using a germanium compound as a polycondensation catalyst, the improvement comprising effecting the polycondensation of the glycol esters obtained from aromatic dicarboxylic acids and glycols or ester-forming derivatives thereof in the presence of 0.001 to 3 percent by weight of at least one compound selected from sterically hindered bisphenols and sterically hindered trisphenols. By this method a stabilizee operation is secured and the resultant products are superior in evenness and whiteness and can be evenly and beautifully dyed.

3,669,928

PROCESS FOR THE PRODUCTION OF HIGH MOLECULAR WEIGHT POLYBENZOXAZINONES

Gunter Lorenz; Manfred Gallus; Wolfgang Giessler, and Gunther Nischk, all of Dormagen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 26, 1970, Ser. No. 50,322

Claims priority, application Germany, July 1, 1969, P 19 33 212.8

Int. Cl. C08g *20/20, 30/02*

U.S. Cl. 260—47 CP 8 Claims

Improvement in the production of high molecular weight polybenzoxazinones from bis-anthranilic acid derivatives and dicarboxylic acid dihalides followed by ring closure of the polyamidocarboxylic acid obtained, wherein ring closure is effected by a liquid or dissolved dehydrating agent in an organic solvent.

3,669,929

METHOD OF PREPARING AROMATIC RESINS AND PRODUCTS THEREOF

Norman Bilow, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Continuation-in-part of application Ser. No. 665,261, Sept. 5, 1967, now abandoned. This application Jan. 7, 1971, Ser. No. 104,818. The portion of the term of the patent subsequent to Jan. 12, 1988, has been disclaimed.

Int. Cl. C08g *33/00*

U.S. Cl. 260—47 R 7 Claims

Improved lacquer, varnish, and plastic compositions utilizing aromatic polyphenylene polymers having a mean molecular weight of not over 1,000 ± 500, reacted with a curing agent, as a polymethylol aromatic compound in the presence of a polymerization catalyst, prepared in solution in a low boiling solvent of about 50° to 120° C.

3,669,930

THERMALLY STABLE THERMOSETTING RESIN

Tomohiko Asahara; Naoya Yoda, both of Kamakura-shi, and Muneyoshi Minami, Otsu-shi, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Nov. 5, 1969, Ser. No. 874,407

Claims priority, application Japan, Nov. 5, 1968, 43/80337; Dec. 13, 1968, 43/90910

Int. Cl. C08g *20/20*

U.S. Cl. 260—47 CZ 1 Claim

The present invention provides a thermosetting resin excellent in thermal stability, mechanical properties and electrical properties which is obtained by reacting dimaleimide with an amide in molten state.

3,669,931

POLYETHYLENE TEREPHTHALATE FILMS CONTAINING HYDRATED ALUMINUM SILICATE FOR LESS SHRINKAGE AND ABRASION

Darrell D. Annis, Taylors; Keith D. Dodson, Greenville, and Paul M. Sykes, Taylors, all of S.C., assignors to Celanese Corporation, New York, N.Y.

Filed July 7, 1970, Ser. No. 53,025

Int. Cl. B32b *27/20, 27/36;* D01f *7/06*

U.S. Cl. 260—75 R 6 Claims

A polyethylene terephthalate film is produced having improved abrasion resistance and low shrinkage properties by the dispersing in the film of hydrated aluminum silicate. The improved film has a coefficient of friction in the range of 0.3 to about 1.0 and the hydrated silica ranges from 0.01 percent to about 0.5 percent by weight of the polymer and has a particle size from about 300 to 1000 millimicrons. The film has an intrinsic viscosity of 0.2 to about 1.0 and after biaxially stretching is heated at 215° C. – 235° C. for a period of time to complete crystallization.

3,669,932

ACCELERATION OF SULFUR VULCANIZATION OF POLYURETHANES

Jean-Marie Massoubre, Clermont Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie, Clermont Ferrand, France

Filed Oct. 15, 1970, Ser. No. 81,155
Claims priority, application France, Oct. 27, 1969, 6936837
Int. Cl. C08g 22/34
U.S. Cl. 260—75 NC 8 Claims

The sulfur vulcanization of sulfur-vulcanizable unsaturated polyurethanes can be accelerated by using as an accelerator an organic compound having at least one alkenyl radical attached to a nitrogen atom, the accelerator being attached to the sulfur-vulcanizable polyurethane molecule itself and/or being an ingredient of a sulfur-vulcanizable polyurethane mixture or recipe.

3,669,933

THERMALLY STABLE DYEABLE POLYESTER FIBERS HAVING INHERENT OIL STAIN RELEASE PROPERTIES

Henry L. King; Eugene L. Ringwald, both of Cary, N.C., and James C. Randall, Jr., Bartlesville, Okla., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of application Ser. No. 789,528, Jan. 7, 1969, now abandoned , and a continuation-in-part of 824,092, May 13, 1969, and a continuation-in-part of 874,638, Nov. 6, 1969. This application Apr. 28, 1970, Ser. No. 32,675. The portion of the term of the patent subsequent to June 6, 1989, has been disclaimed
Int. Cl. C08g 17/08
U.S. Cl. 260—77 11 Claims

Thermally stable fiber-forming polyesters having inherent oil-stain release properties and inherent disperse dye uptake are produced from dicarboxylic acids, or reactive derivatives thereof, glycols and small amounts of mixtures of compounds having a typical general formula: R—O[G—O]$_x$—H; where R is an alkyl group containing an average of about 8–20 carbon atoms; G is a hydrocarbon radical selected from the group consisting of ethylene, propylene and isomers thereof, and mixtures of the above; and x has an average value at least equal to or greater than 9, no greater than about 20, and about equal to or greater than R.

3,669,934

IMPROVED ELASTOMERIC FIBERS

Martin Eden Epstein, Warren Township, Somerset County; Arnold Joseph Rosenthal, Morris, and Joseph Germano Santangelo, Union, all of N.J., assignors to Celanese Corporation of America, New York, N.Y.

Original application May 26, 1964, Ser. No. 370,371, now Patent No. 3,536,803. Divided and this application Mar. 9, 1970, Ser. No. 22,732
Int. Cl. D01f 7/06; D02j 1/12
U.S. Cl. 260—77.5 SP 2 Claims

Improved elastomeric fibers are disclosed and claimed which are comprised of alternating hard and soft segments, i.e., polyesterurethane copolymers, wherein the fibers are improved in properties, particularly permanent set. The fibers of this invention have utility in conventional textile uses.

3,669,935

THERMALLY STABLE POLYESTER FIBERS HAVING INHERENT OIL-STAIN RELEASE PROPERTIES

Henry L. King; Eugene L. Ringwald, both of Cary, N.C., and James C. Randall, Bartlesville, Okla., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of application Ser. No. 789,528, Jan. 7, 1969, now abandoned , Continuation-in-part of application Ser. No. 824,092, May 13, 1969. This application Nov. 6, 1969, Ser. No. 874,638. The portion of the term of the patent subsequent to June 6, 1989, has been disclaimed
Int. Cl. C08g 17/08
U.S. Cl. 260—77 11 Claims

Thermally stable fiber-forming polyesters having inherent oil-stain release properties are produced from dicarboxylic acids, or reactive derivatives thereof, glycols and small amounts of mixtures of compounds having a typical general formula: R—O[G—O]$_x$—H, where R is an alkyl group containing an average of at least eight carbon atoms; G is a hydrocarbon radical selected from the group consisting of ethylene, propylene and isomers thereof, and mixtures of the above; and x has an average value at least equal to or greater than 9, and no greater than about 20.

3,669,936

POLYDIMERCAPTO-S-TRIAZINES

Franz Regenass Oristalstrasse 45, Liestal; Peter Christoph Schlumbom, Dornliweg 1, Therwil, and Hansjorg Heller, Vorderbergweg 1a, Riehen, all of Switzerland

Filed Aug. 22, 1969, Ser. No. 852,452
Claims priority, application Switzerland, Aug. 30, 1968, 13088/68
Int. Cl. C08g 22/04
U.S. Cl. 260—77.5 AQ 9 Claims

Polydimercapto-s-triazines and crosslinked polydimercapto-s-triazines are useful as lacquers and adhesives. An embodiment is a copolymer of 2-[Bis-(2-ethylhexyl)-amino]-4,6-dimercapto-s-triazine and 2-(N-n-butyl-N-β-hydroxyethylamino)-4,6-dimercapto-s-triazine crosslinked with hexamethylene diisocyanate.

3,669,937

PROCESS FOR THE PRODUCTION OF POLYIMIDES

Wilfried Zecher, Cologne-Stammheim, and Rudolf Merten, Leverkusen, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 26, 1969, Ser. No. 810,787
Claims priority, application Germany, Apr. 5, 1968, P 17 70 137.0
Int. Cl. C08g 22/02
U.S. Cl. 260—77.5 R 5 Claims

Process for the production of polyimides by reaction of a urea and a cyclic dicarboxylic acid anhydride containing at least one additional functional group capable of condensation or addition.

3,669,938

REMOVAL OF VOLATILES FROM POLYAMIDES

Raghunath V. Date, Woodbridge, and George R. Furness, Dunellen, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Mar. 17, 1970, Ser. No. 20,393
Int. Cl. C08g 20/20
U.S. Cl. 260—78 R 2 Claims

An improved method for facilitating removal of volatile materials from polyamides to be used in molding operations, without effecting the polyamide's relative viscosity or impairing its physical properties, is presented wherein the polyamide forming monomer is polymerized in the presence of small quantities of 1,4 diaminocyclohexane adipate.

3,669,939

CONDENSATION POLYMERS

Alan Stuart Baker, Slough, and Derek John Walbridge, Beaconsfield, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed July 6, 1970, Ser. No. 52,692
Claims priority, application Great Britain, June 16, 1970, 29,125/70
Int. Cl. C08g 17/02
U.S. Cl. 260—78 A 3 Claims

Polymers are prepared by condensing a polyhydroxy monocarboxylic acid of formula (OH)$_n$R—COOH, wherein n

is an integer from two to six and R is a hydrocarbon radical containing up to 22 carbon atoms to which the hydroxyl groups are attached and optionally interrupted by or containing a hetero atom, with other condensable species which exclude those containing more than one carboxyl group or a group equivalent to more than one carboxyl group. The polymer per se or when attached to another moiety are useful in coating compositions.

3,669,940

TWO-STEP BULK POLYMERIZATION OF PIVALOLACTONE

Paul J. A. Desgurse, and Harm P. Rogaar, both of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed Oct. 9, 1969, Ser. No. 864,990
Claims priority, application Netherlands, Mar. 10, 1969, 6903704
Int. Cl. C08g *17/017*
U.S. Cl. 260—78.3 R **6 Claims**

Between 50 and 85 per cent of a beta-lactone such as pivalolactone is bulk polymerized in an initial reactor at a maximum temperature of 300° C. The polymerization is then continued in at least one subsequent reactor. Preferably, the reactors are gear pumps.

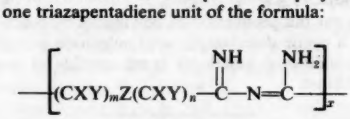
3,669,941

POLYTRIAZAPENTADIENE POLYMERS

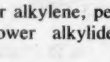
Edwin Dorfman, Grand Island; William E. Emerson, both of Grand Island; Claude T. Bean, Jr., Niagara Falls, and Russell L. K. Carr, Grand Island, all of N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of application Ser. No. 533,418, Mar. 11, 1966, now Patent No. 3,489,727. This application Sept. 23, 1969, Ser. No. 860,413. The portion of the term of the patent subsequent to Jan. 13, 1987, has been disclaimed.
Int. Cl. C08g *33/06*
U.S. Cl. 260—78.4 N **18 Claims**

This invention relates to triazapentadiene polymers having at least one triazapentadiene unit of the formula:



wherein each X is selected from chlorine and fluorine, each Y is selected from halogen and perhalo lower alkyl, *m* and *n* are positive integers greater than zero, *x* is from 3 to 1 million, $-(CXY)_mZ(CXY)_n-$ is a divalent polyhalo organic radical where the sum of *m* plus *n* plus the number of equivalent units in Z is at least 4 and Z is at least one member of the group of perhalo lower alkylene, perhalo lower alkylidene, omegahydroperhalo lower alkylidene, keto, oxy, thio, sulfoxide, sulfone,



wherein R is selected from perhalo lower alkyl and omegahydroperhalo lower alkyl, polyperfluorooxyalkylene where each alkylene unit has from two to ten carbon atoms and the units are from 2 to 35 in number, poly(perfluoroalkylene dioxy) where each alkylene unit has from two to ten carbon atoms and the units are from 2 to 35 in number, perfluoroalkylene dioxy, perhalo lower alkylamino, perhalocyclopentylene, perhalocyclohexylene, perhalopyridinediyl, perhalopyrazolidinediyl, perhalopyranylene, perhalopiperidylene, perhalophenylene, perhalonaphthalenediyl, perhalodicalinylene, oxadiazolylene, triazolylene, triazinylene, and aryl perhalo lower alkylene wherein substituents on the said aryl group are selected from hydrogen, lower alkenyl, chloro, fluoro, lower alkoxy, nitro, nitroso, cyano, and alkoxy carbonyl; and terminal groups individually selected from the group consisting of nitrile, amidine, $-(CXY)_mZ(CXY)_nCN$, alkyl imidates, thioalkyl esters, thioaryl esters, thiolalkyl esters, thiolaromatic esters, alkyl, omegahydroperhaloalkyl, perhaloalkyl, perhaloalkene, perhaloalkyne, aryl, lower alkyl ester, aryl ester, carbourea, and perhalo lower alkyl amidine.

3,669,942

COPOLYMERS OF VINYL ESTERS OF BRANCHED ACIDS

William J. Van Westrenen; Pieter De Carpentier, both of Delft, and Willem H. M. Nieuwenhuis, Amsterdam, all of Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed June 30, 1970, Ser. No. 51,326
Claims priority, application Great Britain, July 3, 1969, 33,543/69
Int. Cl. C08f *15/40*
U.S. Cl. 260—78.5 R **11 Claims**

Copolymers of (a) a vinyl ester of an alpha-branched, saturated, aliphatic monocarboxylic acid of five–20 carbon atoms, (b) an alpha,beta-ethylenically unsaturated carboxylic acid of three to five carbon atoms, (c) a monovinylaromatic compound of eight to nine carbon atoms, (d) a 2-hydroxyalkylester or an amide of an alpha,beta-ethylenically unsaturated carboxylic acid and, optionally, (e) a C_1–C_4 alkyl ester of acrylic or methacrylic acid and their preparation are described. These special copolymers are especially suitable in water-thinnable compositions, particularly in electrodepositable compositions to produce pore-free coatings or films.

3,669,943

PROCESS FOR PRODUCING CONJUGATED DIOLEFIN POLYMER WITH REDUCED COLD FLOW

Koei Komatsu, Yokohama; Eitaro Okuya, Yokkaichi; Katsuyoshi Tomioka, Yokohama; Masato Sakai, Yokkaichi; Shigeki Hayashi, Yokkaichi; Hidetoshi Yasunaga, Yokkaichi, and Akira Kogure, Tokyo, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Chuo-ku, Tokyo, Japan

Filed May 28, 1970, Ser. No. 41,619
Claims priority, application Japan, May 31, 1969, 44/41719
Int. Cl. C08d *1/32;* **C08f** *19/08, 1/28*
U.S. Cl. 260—80.7 **13 Claims**

A process for producing a homopolymer or copolymer of a conjugated diolefin by polymerizing a conjugated diolefin alone or copolymerizing a conjugated diolefin with a vinyl aromatic hydrocarbon in the presence of a lithium-type initiator in a hydrocarbon solvent, characterized in that the quantity of said initiator required for the polymerization is divided into two portions, A and B, in a molar ratio of A : B = 1 : 3 to 15, and said portion A is added at the outset to initiate the polymerization, and when the conversion to polymer has reached 20 to 60 percent by weight said portion B is added to the polymerization system to carry out the polymerization until it is substantially completed. The polymer obtained by the present process retains the desirable properties which a conventional conjugated diolefin polymer has, and is, in addition, characterized by reduced cold flow.

3,669,944

PROCESS FOR PRODUCING CHLOROPRENE COPOLYMER

Toshio Sakomura; Akihiko Shimizu; Takayuki Kino, and Atsushi Kita, all of Yamaguchi, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Nanyo-cho, Tsuno-gun, Yamaguchi, Japan

Filed Aug. 14, 1970, Ser. No. 63,943
Claims priority, application Japan, Aug. 14, 1969, 44/64306
Int. Cl. C08d *1/09, 3/14, 3/02*
U.S. Cl. 260—82.1 **6 Claims**

A process for producing a chloroprene copolymer which comprises copolymerizing chloroprene with acrylonitrile as

at least one component and another monomer which can be easily copolymerized with chloroprene in the presence of a halogenated aliphatic hydrocarbon having at least one bromine bond, with a free radical initiator.

3,669,945

PROCESS FOR PRODUCING A HOMOPOLYMER OR COPOLYMER OF ETHYLENE WITH NOVEL CATALYST

Kohei Nakaguchi, Kobe; Tomozumi Nishikida, Itami-shi; Shohachi Kawasumi; Kenichi Maemoto, both of Takatsuki-shi; Takezo Sano, Ibaraki-shi; Yoshikazu Fujii, Takatsuki-shi; Koichi Harada, Ibaraki-shi, and Keijyu Ueda, Nihama-shi, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Mar. 6, 1967, Ser. No. 620,615
Claims priority, application Japan, Mar. 8, 1966, 41/14524
Int. Cl. C08f *15/04*
U.S. Cl. 260—85.3 R 18 Claims

A process for the homopolymerization and copolymerization of ethylene using a catalyst composed of (1) a substance obtained by treating with an alcohol a reaction product of a vanadium compound and a phosphoric acid or its derivative, or a mixture thereof and (2) an organo-aluminum compound having the composition formula, R_nAlX_{3-n} wherein R is a hydrocarbon group having one to eight carbon atoms; X is a group selected from halogen, alkoxy group and hydrogen; and *n* is a positive number not more than 3.

3,669,946

METHOD FOR PREPARING POLYVINYL CHLORIDE BY SUSPENSION POLYMERIZATION

Shunichi Koyanagi; Shigenobu Tajima, both of Naoetsu; Toshihide Shimizu, Okata-Machi, Nakakubiki-gun, and Kazuhiko Kurimoto, Nakakubiki-gun, all of Japan, assignors to Shinetsu Chemical Company

Filed Aug. 31, 1970, Ser. No. 68,585
Int. Cl. C08f *3/30, 1/11, 1/88*
U.S. Cl. 260—87.5 R 17 Claims

Vinyl chloride or a mixture of vinyl monomers containing vinyl chloride in the ratio of at least 50 percent of the mixture is subjected in a polymerization vessel to suspension polymerization in an aqueous medium containing a suspending agent and an oil-soluble catalyst. The inner walls as well as the stirring blades and/or the condenser with which the vessel is equipped, are coated with a polar organic compound, dye, and/or pigment. The amount of polymer scale deposited on the inner walls of the vessel is reduced.

3,669,947

PROCESS FOR THE PRODUCTION OF ALPHA-METHYLSTYRENE POLYMER

Henry Kahn, Arlington Heights, and Takeo Hokama, Chicago, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Filed Feb. 2, 1970, Ser. No. 8,030
Int. Cl. C08f *7/04, 1/08*
U.S. Cl. 260—93.5 S 8 Claims

A process for the production of alpha-methylstyrene polymer which comprises continuously polymerizing alpha-methylstyrene dissolved in an inert organic reaction medium at a concentration of from about 5 to about 20 weight percent which has been precooled to a temperature between about 0 and about −50° C in the presence of water and a Friedel-Crafts halide at atmospheric pressure and substantially adiabatic conditions.

3,669,948

METHOD FOR PRODUCING POLY α-OLEFINS

Shiro Konotsune; Atsuyuki Kachi; Takao Tonolke, and Kinya Mori, all of Yokohamashi, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Sept. 4, 1970, Ser. No. 69,919
Int. Cl. C08f *1/56, 3/10*
U.S. Cl. 260—93.7 10 Claims

Polypropylene or copolymer of propylene with another α-olefin is produced by polymerizing propylene or propylene together with another α-olefin, at a temperature below 80° C, in the presence of a three component catalyst system consisting of $TiCl_3$ or $TiCl_3 \cdot 1/3AlCl_3$, a trialkyaluminum or dialkylaluminum halide, and polyethyleneglycol dialkylether or polyethylenethioglycol dialkylthioether, and substantially in the absence of any solvent, whereby a number of advantages can be obtained such as not only the exemption from usual drawbacks of solvent polymerization, for example, solvent loss, increase of cost necessary for solvent recovery, etc.; but also the fact that the product can be used directly to molding without removing amorphous polypropylene (APP); increase in polymerization rate; no formation of appreciable atactic polymer is the copolymerization of propylene; higher bulk density of the product; easy removal of catalyst; etc.

3,669,949

PROCESS FOR PRODUCING A CIS-1,4 DIOLEFIN

Jin Sun Yoo, South Holland, Ill., assignor to Atlantic Richfield Company, New York, N.Y.

Filed July 28, 1969, Ser. No. 845,496
Int. Cl. C07c *3/10, 11/12*
U.S. Cl. 260—680B 21 Claims

A solid phase catalyst composition comprising a complex of iron or cobalt, a Group V–A electron donor ligand, and a non-protonic Lewis acid and reducing agent on a solid, acidic silica-based support. Exemplary is a complex comprising ferric acetylacetonate, bis(diphenylphosphino)ethane, and triethylaluminum on a solid, acidic silica-based support. Use of such catalysts in the copolymerization of monoolefin hydrocarbons with diolefin hydrocarbons is disclosed.

3,669,950

DIPYRAZOLO[3,4-B:3,4D]-PYRIDIN-3-ONES

Hans Hoehn, Tegernheim, and Ernest Schulze, Regensburg, both of Germany, assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

Filed Dec. 1, 1970, Ser. No. 94,179
Int. Cl. C07d *31/44*
U.S. Cl. 260—295.5 T 12 Claims

New dipyrazolo[3,4—*b*:3′,4′-d]pyridin-3-ones and their salts are useful as central nervous system depressants. This type of compound also increases the intracellular concentration of adenosine-3′,5′-cyclic monophosphate.

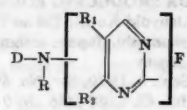
3,669,951

REACTIVE AZO DYESTUFFS CONTAINING A-FLUOROPYIMIDINYL GROUP

Hans-Samuel Bien, Burscheid, and Erich Klauke, Odenthal-Hahnenberg, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 1, 1967, Ser. No. 664,943
Claims priority, application Germany, Sept. 10, 1966, F 50181; Mar. 25, 1967, F 51942
Int. Cl. C09b *45/14, 62/24;* D06p *1/38*
U.S. Cl. 260—146 D 24 Claims

Reactive dyestuffs of the formula



in which D is the residue of an organic dyestuff, R is hydrogen or a lower alkyl, R_1 is hydrogen or a substituent, R_2 is hydrogen, halogen, substituted or unsubstituted alkyl, alkenyl, aralkyl or aryl radical, carboxylic acid ester radical, carboxylic acid amide radical, alkyl-sulphone, or arylsulphone; and F is fluoro; and process for the preparation of such dyestuffs. These dyestuffs are particularly useful in dyeing materials containing hydroxyl groups and nitrogen, e.g. regenerated cellulose, wool, silk, synthetic polyamide, and polyurethane which dyeings possess excellent fastness to wet processing and good fastness to washing, milling and potting on wool.

3,669,952

9-DIHYDROMEGALALOSAMINE AND ESTERS THEREOF AND METHODS FOR THEIR MANUFACTURE

Alan K. Mallams, West Orange, N.J., assignor to Schering Corporation, Bloomfield, N.J.

Filed Oct. 13, 1969, Ser. No. 865,956
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 AB 7 Claims

9-Dihydromegalalosamine and ester derivatives thereof and their pharmaceutically acceptable acid addition salts are novel macrolides exhibiting antibiotic activity.

9-Dihydromegalalosamine and ester derivatives thereof are prepared by treating megalalosamine and ester derivatives thereof with an alkali metal borohydride in an inert solvent. 9-Dihydromegalalosamine 2′,4″-diacylates, 9-dihydromegalalosamine 3,9,2′,4″-tetraacylates and 9-dihydromegalalosamine 3,9,12,2′,4″-pentaacylates are prepared by treating 9-dihydromegalalosamine in a basic medium with an acylating reagent of a hydrocarbon carboxylic acid. 9-Dihydromegalalosamine 3,9-diacylates and 9-dihydromegalalosamine 3,9,12-triacylates are prepared by subjecting a 9-dihydromegalalosamine 3,9,2′,4″-tetraacylate and a 9-dihydromegalalosamine 3,9,12,2′,4″pentaacylate, respectively to mild hydrolysis.

3,669,953

MEGALALOSAMINE AND ESTERS THEREOF AND METHODS FOR THEIR MANUFACTURE

Alan K. Mallams, West Orange, N.J., assignor to Schering Corporation, Bloomfield, N.J.

Filed Oct. 13, 1969, Ser. No. 865,957
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 AB 14 Claims

Megalalosamine and ester derivatives thereof and their pharmaceutically acceptable acid addition salts are novel macrolides exhibiting antibiotic activity.

Megalalosamine is prepared by treating one of megalomicin A, megalomicin B, megalomicin C_1 and megalomicin C_2, or mixtures thereof with aqueous acid. Megalalosamine 2′,4″-diacylates and megalalosamine 3,2′,4″-triacylates are prepared by treating megalalosamine in a basic medium with an acylating reagent of a hydrocarbon carboxylic acid or a hydrocarbon sulfonic acid. Megalalosamine 3-monoacylates are prepared by subjecting a megalalosamine 3,2′,4″-triacylate to mild hydrolysis. Mixed 3,2′,4″-triacylate esters of megalalosamine are prepared by treating one of megalalosamine, a 3-monoacylate thereof, or a 2′,4″-diacylate thereof in a basic medium with an acylating reagent of a hydrocarbon carboxylic acid or a hydrocarbon sulfonic acid. 3-Tetrahydropyranyl-2′,4″-diacyl-megalalosamines are prepared by treating a megalalosamine 2′,4″-diacylate with dihydropyran in the presence of acid.

3,669,954

PROCESS FOR PRODUCING SEMIPERMEABLE MEMBRANES

Otto S. Schaeffler, Arcadia, Calif., assignor to The United States of America as represented by the Secretary of the Interior

Filed May 4, 1970, Ser. No. 34,578
Int. Cl. C08b *3/22;* B01d *13/00;* B29h *7/20*
U.S. Cl. 260—230 R 3 Claims

Semipermeable membranes having improved reverse osmosis properties are prepared by crosslinking cellulose acetate methacrylate membranes in an aqueous persulfate-bisulfite redox system. The resulting membranes exhibit superior long-term reverse osmosis properties and find particular utility in desalination of water.

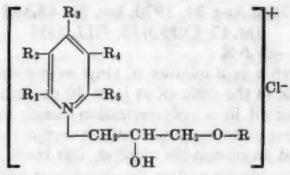
3,669,955

QUATERNARY PYRIDINIUM SALT-STARCH ETHER DERIVATIVES

Glenn Arden Hull, Oak Park, Ill., assignor to CPC International Inc.

Filed Dec. 26, 1968, Ser. No. 787,259
Int. Cl. C08b *19/01*
U.S. Cl. 260—233.3 R 3 Claims

A quaternary pyridinium salt-polyol ether product represented by the formula:



where R_1, R_2, R_3, R_4 and R_5 are hydrogen or methyl and R is starch.

3,669,956

4-SUBSTITUTEDAMINO-PHENYLACETIC ACIDS AND DERIVATIVES THEREOF

Joachim Borck; Johann Dahm; Volker Koppe; Josef Kramer; Gustav Shorre; J. W. Hermann Hovy, and Ernst Schorscher, all of Darmstadt, Germany, assignors to E. Merck A. G., Darmstadt, Germany

Filed July 22, 1968, Ser. No. 746,326
Claims priority, application Germany, July 22, 1967, M 74881; Jan. 8, 1968, M 76850; Feb. 23, 1968, M 77363; Mar. 1, 1968, M 77429
Int. Cl. C07d *41/04*
U.S. Cl. 260—239 BF 144 Claims

As a group of extraordinarily active anti-inflammatory agents, 4-aminophenyl acetic acids substituted at the

nitrogen and phenyl positions, and derivatives thereof, e.g., 3-chloro-4-piperidino-α-methyl acetic acid, 3-methyl-4-piperidino-α-methyl acetic acid, and 4-piperidino-naphthyl acetic acids.

3,669,957

PROCESS FOR THE PREPARATION OF SODIUM AMPICILLIN

Charles A. Robinson, 1402 Carroll Brown Way, and Arthur C. Adams, 255 Elmwood Avenue, both of West Chester, Pa., assignor to American Home Products Corporation, New York, New York

Continuation of application Ser. No. 699,776, Jan. 23, 1968. This application Apr. 24, 1970, Ser. No. 29,750

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **7 Claims**

A process for producing sodium ampicillin in crystalline form by first preparing the soluble diethylamine salt of ampicillin by the reaction of anhydrous ampicillin with diethylamine in methylene chloride, adding thereto a methylene chloride solution of sodium 2-ethylhexanoate, and then obtaining high yields of high purity sodium ampicillin in crystalline form by adding acetonitrile to the mixture.

3,669,958

6-[N-(SUBSTITUTED-IMIDOYL)-AMINOACETAMIDO]PENCILLANIC ACIDS

Charles Truman Holdrege, Camillus, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Filed June 29, 1970, Ser. No. 50,997

Int. Cl. C07d *99/14, 99/24*

U.S. Cl. 260—239.1 **12 Claims**

6-[N-(substituted-imidoyl)aminoacetamido]penicillanic acids and their salts are valuable as antibacterial agents, nutritional supplements in animal feeds, therapeutic agents in poultry and animals, including man, and are especially useful in the treatment of infectious diseases caused by Gram-positive and certain Gram-negative bacteria, most particularly those caused by the Proteus genus. 6-[N-(Phenylacetimidoyl)-aminoacetamido]penicillanic acid, a preferred embodiment of the invention, is prepared by Raney nickel hydrogenation (50 p.s.i., R.T.) of an aqueous solution of sodium 6-(3-benzyl-1,2,4-oxadiazole-5-one-4-acetamido)penicillanate which is prepared in turn by reaction of 6-aminopenicillanic acid with 3-benzyl-1,2,4-oxadiazole-5-one-4-acetyl chloride.

3,669,959

THIENO-DIAZEPIN-ONES

Otto Hromatka, and Dieter Binder, both of Vienna, Austria, assignors to Invag Aktiengesellschaft, Zurich, Switzerland

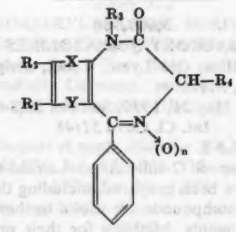
Filed Dec. 10, 1969, Ser. No. 884,020

Claims priority, application Austria, Dec. 10, 1968, A 12016/68; Feb. 5, 1969, A 1132/69

Int. Cl. C07d *53/02, 63/18*

U.S. Cl. 260—239.3 B **19 Claims**

Thieno-diazepine derivatives of the formula



wherein one of the symbols X and Y is a direct carbon-to-carbon linkage and the other is a —S— group; n is O or 1; R_1 is hydrogen, lower alkyl, aryl or trifluoromethyl; R_2 is hydrogen, lower alkyl, aryl, trifluoromethyl, halogen, nitro, lower alkoxy or NR_5R_6 in which R_5 and R_6 are independently selected from the group consisting of halogen, lower alkyl and acyl; R_3 is hydrogen, lower alkyl and when n is 0, R_4 is a lower alkanoyloxy or hydroxy group; the symbols R_5 and R_6 being lower alkyl or acyl or one of them being hydrogen and the other acyl when n is 1 or when R_4 is a lower alkanoyloxy or hydroxy group and the acid addition salts thereof are useful as muscle relaxants and/or sedatives (tranquilizers).

3,669,960

NOVEL AMIDES OF 3-INDOLYLACETIC ACID

Tadashi Okamoto, Ashiya-shi; Tsuyoshi Kobayashi, Minoo-shi, and Hisao Yamamoto, Nishinomiya-shi, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

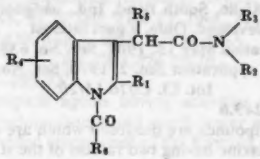
Filed Aug. 18, 1969, Ser. No. 851,063

Claims priority, application Japan, Sept. 10, 1968, 43/65457; 43/65458

Int. Cl. C07d *26/56*

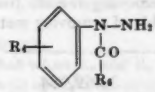
U.S. Cl. 260—240 J **1 Claim**

Novel 3- indolylacetamide derivatives, and salts thereof, useful for antiinflammatory agents, which are represented by the formula,

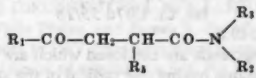


wherein

R_1 and R_5 independently signify hydrogen, methyl or ethyl; R_2 signifies C_1–C_4 alkyl, dialkylaminoalkyl, aralkyl, cycloalkyl, cycloalkylalkyl, carboalkoxyalkyl, carbobenzyloxyalkyl, hydroxyalkyl or heterocyclic ring; R_3 signifies hydrogen or alkyl, R_2 and R_3 being conjugated to form a heterocylic ring; R_4 signifies alkoxy, alkyl or halogen; and R_6 signifies styryl or methylenedioxyphenyl. These derivatives are produced by reacting a corresponding 3- indolylacetic acid with a corresponding amine derivative or reacting an N^1-acylphenyl hydrazine derivative of the formula,



or its salt or its hydrazone derivative with a keto amide derivative of the formula,



wherein R_1, R_2, R_3, R_4, R_5 and R_6 are as defined above.

3,669,961

PROCESS FOR THE PREPARATION OF HYDROXYBENZYL ESTERS OF CYANURIC ACID

Jack C. Gilles, Shaker Heights, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed May 27, 1969, Ser. No. 828,376

Int. Cl. C07d *55/38*

U.S. Cl. 260—248 NS **20 Claims**

Hydroxybenzyl-substituted isocyanurates are prepared by the condensation reaction of a phenol with cyanuric acid or a

partial ester of cyanuric acid and formaldehyde. The hydroxybenzyl-substituted isocyanurates and particularly 3,5-dialkyl-4-hydroxybenzyl isocyanurates and useful stabilizers for a wide variety of organic materials including olefin homopolymers and copolymers.

3,669,962

PROCESS FOR THE PREPARATION OF HYDROXYBENZYL-SUBSTITUTED ISOCYANURATES

Peter D. Smith, Cleveland, and George Kletecka, Fairview Park, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Filed May 27, 1969, Ser. No. 828,377
Int. Cl. C07d *55/38*
U.S. Cl. 260—248 NS 17 Claims

Hydroxybenzyl-substituted isocyanurates are prepared by the reaction of a phenol with cyanuric acid or a partial ester of cyanuric acid and formaldehyde in an alcoholic reaction medium. The hydroxybenzyl-substituted isocyanurates and particularly 3,5-dialkyl-4-hydroxybenzyl isocyanurates are useful stabilizers for a wide variety of organic materials including olefin homopolymers and copolymers.

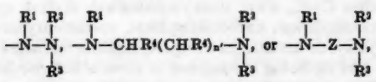
3,669,963

SUBSTITUTED AMINO-S-TRIAZINES

Gaetano F. D'Alelio, South Bend, Ind., assignor to Walter J. Monacelli, Cleveland, Ohio, a part interest

Original application May 15, 1967, Ser. No. 638,654. Divided and this application Jan. 2, 1970, Ser. No. 5,399
Int. Cl. C07d *55/20*
U.S. Cl. 260—249.6 7 Claims

Triazine compounds are disclosed which are derivatives of symmetrical triazine having two radical of the structure



there being at least one metal coordinating group of the structure —CHR⁴COOM, wherein M, Z, R², R_3 and R⁴ are as defined hereinafter. These compounds are useful for coordinating with and removing metals from solutions or for preparing resins capable of removing metals from solutions.

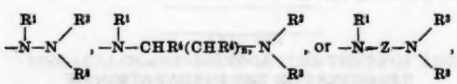
3,669,964

SUBSTITUTED AMINO-S-TRIAZINES

Gaetano F. D'Alelio, South Bend, Ind., assignor to Walter J. Monacelli, Cleveland, Ohio, a part interest

Original application May 15, 1967, Ser. No. 638,654. Divided and this application Jan. 2, 1970, Ser. No. 5,391
Int. Cl. C07d *55/18*
U.S. Cl. 260—249.8 6 Claims

Triazine compounds are disclosed which are derivatives of symmetrical triazine having one radical of the structure



there being at least one metal coordinating group of the structure —CHR⁴COOM, wherein M, Z, R², R³ and R⁴ are as defined hereinafter. These compounds are useful for coordinating with and removing metals from solutions or for preparing resins capable of removing metals from solutions.

3,669,965

1-LOWER ALKYL OR ALKYLENE SUBSTITUTED-6,7-METHYLENEDIOXY-4(1H)-OXOCINNOLINE-3-CARBOXYLIC ACIDS AND METHODS FOR MAKING AND USING SAME

William A. White, Fountaintown, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 796,546, Feb. 4, 1969, abandoned.
Filed Dec. 29, 1969, Ser. No. 888,880
Int. Cl. 260 *340.5;* C07d *51/08*
U.S. Cl. 260—250 A 19 Claims

1-Lower alkyl or alkenyl substituted-6,7-methylenedioxy-4(1H)-oxocinnoline-3-carboxylic acids, active against Gram-negative bacteria and Mycoplasma organisms and methods for the preparation and use thereof.

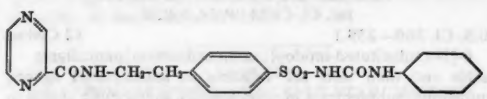
3,669,966

PYRAZINE DERIVATIVES AND PROCESS FOR THEIR PREPARATION

Vittorio Ambrogi, Bresso, and Willy Logemann, Milan, both of Italy, assignors to Carlo Erba S.p.A., Milan, Italy

Filed Mar. 24, 1970, Ser. No. 22,389
Claims priority, application Italy, June 18, 1969, 18301 A/69; Mar. 26, 1969, 14581 A/69
Int. Cl. C07d *99/24*
U.S. Cl. 260—250 R 15 Claims

Pyrazine derivatives wherein a pyrazine ring is introduced into benzenesulphonyl-urea compounds, typified by the compound



are disclosed. These compounds have hypoglycemic properties and are useful in the treatment of diabetic conditions.

3,669,967

PHARMACOLOGICALLY ACTIVE QUINAZOLINONE COMPOUND, ITS USE IN PHARMACOLOGICAL PREPARATIONS AND PROCESS FOR ITS PREPARATION

Karl-Heniz Boltze, Bensberg-Kippekausen, and Dietrich Lorenz, Kleinhurden, Post B. Bensburg, both of Germany, assignors to Troponwerke Dinklage & Co., Berliner Strasse, Cologne-Mulheim, Germany

Filed July 15, 1970, Ser. No. 55,247
Claims priority, application Germany, July 18, 1969, P 19 36 588.9
Int. Cl. C07d *51/48*
U.S. Cl. 260—256.4 Q 2 Claims

2-Methyl-3- N-[3-(4-phenylpiperazinyl-(1))-2-hydroxypropyl-(1)]-anilino quinazolinone-(4) and its non-toxic acid addition salts which have a strong cataleptic activity.

3,669,968

TRIALKOXY QUINAZOLINES

Hans-Jurgen E. Hess, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed May 21, 1970, Ser. No. 39,541
Int. Cl. C07d *51/48*
U.S. Cl. 260—256.5 R 15 Claims

A series of novel 2-substituted-4-amino-6,7,8-trialkoxyquinazolines have been prepared, including their acid addition salts. These compounds are useful in therapy as potent antihypertensive agents. Methods for their preparation are described in detail, including various synthetic routes leading to the required novel intermediates.

3,669,969

BENZIMIDAZO [2,1-B] QUINALOZIN-12-(6H)ONES

William H. W. Lunn, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 24, 1969, Ser. No. 879,579
Int. Cl. C07d 57/12
U.S. Cl. 260—256.4 F 6 Claims

Benzimidazo [2,1-b]quinazolin- 12(6H)ones, immunosuppressives and agents for treatment of auto-immune diseases, are prepared via (1) reacting a 2-chlorobenzimidazole with an anthranilic acid or ester; (2) reacting a 2-aminobenzimidazole with an anthranilic acid or ester in the presence of trifluoroacetic acid or (3) reacting a 2-methylmercaptobenzimidazole with an anthraniloyl halide hydrohalide.

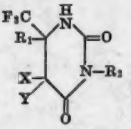
3,669,970

3,5,6-SUBSTITUTED-6-(TRIFLUOROMETHYL)-HYDROURACILS

Albert William Lutz, Montgomery Township, and Richard William Feeny, Hightstown, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of application Ser. No. 804,708, Mar. 5, 1969, now abandoned. This application Mar. 17, 1970, Ser. No. 20,382
Int. Cl. C07d 51/30
U.S. Cl. 260—260 11 Claims

Herbicidal 3,5,6-substituted-6-(trifluoromethyl)-hydrouracils are provided having the formula:



wherein:
X is halogen or lower alkyl;
Y is halogen;
R_1 is halogen, hydroxy, alkoxy or haloalkoxy; and
R_2 is hydrogen, alkyl, substituted alkyl, phenyl, cyclohexyl cyclopentyl, substituted phenyl, or alkenyl.

3,669,971

N-(SUBSTITUTED-POLYHYDROCYCLOALKANO[B]QUINOLINES CARBOXAMIDES

Julius Diamond, Lafayette Hill, Pa., assignor to William H. Rorer Inc., Fort Washington, Pa.

Filed Dec. 27, 1968, Ser. No. 787,613
Int. Cl. C07d 39/00, 51/70, 37/02
U.S. Cl. 260—286 R 4 Claims

The compounds of this invention are useful in the treatment of mammals for auricular tachycardia. They are effective, potent anti-arrythmic agents with a wide safety margin between effective doses and toxic doses. For example, one of the compounds of this invention is approximately equipotent to quinidine sulfate, with an equally long or longer duration of action, but is only one-half as toxic as quinidine sulfate.

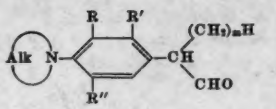
3,669,972

P-AMINOARYLALKANAL DERIVATIES

Joachim Borck; Johann Dahm; Volker Koppe; Josef Kramer; Gustav Schorre; Jan Willem Hovy, and Ernst Schorscher, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Continuation-in-part of application Ser. No. 746,326, July 22, 1968, and 845,076, July 25, 1969. This application Jan. 7, 1970, Ser. No. 1,310
Claims priority, application Germany, Jan. 7, 1969, P 19 00 585.7
Int. Cl. C07d 29/36
U.S. Cl. 260—293.73 16 Claims

p-Aminoarylaklanals of the formula



and the corresponding aldehydic functional derivatives thereof, wherein R and R′ are H or, collectively, —CH CH—CH CH—; R″ is halogen, NO_2, CH_3, C_2H_5, CF_3, CH_3S, C_2H_5S or, when R and R′ collectively are —CH CH—CH CH—, H; *m* is 0–2; and Alk is alkylene, have antiphlogistic, analgesic, antipyretic and other valuable pharmacological activities.

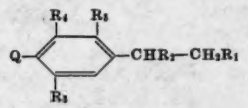
3,669,973

ANTIPHLOGISTIC P-AMINOARYLALKANOL DERIVATIES

Joachim Borck; Johann Dahm; Volker Koppe; Josef Kramer; Gustav Schoree; Jan Willem Herman Hovy, and Ernst Schorscher, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Continuation-in-part of application Ser. No. 746,326, July 22, 1968. This application July 25, 1969, Ser. No. 845,076
Claims priority, application Germany, July 27, 1967, M 74 881; Jan. 8, 1968, M 76 850; Feb. 23, 1968, M 77 363; Mar. 1, 1968, M 77 429; Aug. 1, 1968, P 17 95 036.6
Int. Cl. C07d 29/36
U.S. Cl. 260—293.73 31 Claims

As antiphlogistic agents having activities as 1-perhydroazepinyl; as indomethacin and much lower acute toxicities, there are provided compounds of the formula



wherein
R_1 represents a free, esterified or etherified OH-group;
R_2 represents H, CH_3 or C_2H_5;
R_3 represents H, F, Hal, NO_2, NH_2, CH_3, C_2H_5, CH_3S or C_2H_5S;
R_4 and R_5 represent H or, together, —CH CH—CH CH;
Q is pyrrolidino, piperidino or homopiperidino, 1-perhydroazepinyl; and
Hal represents Cl, Br or I;
With the provision that when R_4 and R_5 represent H, R_3 does not represent H, as well as the acid addition salts and quaternary ammonium salts thereof.

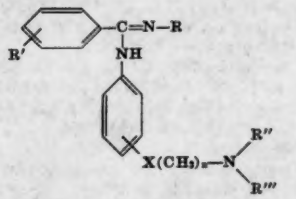
3,669,974

N,N1-DISUBSTITUTED BENZAMIDINES

Bill Elpern, White Plains, and James R. Shroff, Bronx, both of N.Y., assignors to USV Pharmaceutical Corporation

Continuation-in-part of application Ser. No. 845,030, July 25 1969, now abandoned. This application Mar. 25, 1971, Ser. No. 128,125
Int. Cl. C07d 29/28
U.S. Cl. 260—293.79 7 Claims

Compounds of the formula



wherein R is lower alkyl, cycloalkyl, phenyl, naphthyl, pyridyl, or substituted phenyl, R′ is hydrogen, lower alkyl, lower alkoxy, or halogen,

is dialkylamino or a heterocyclic ring, *n* is an integer from 2–4, and X is oxygen or sulfur, possess hypoglycemic activity.

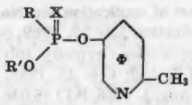
3,669,975

CERTAIN 6-METHYL-3-PYRIDYL PHOSPHATES, CORRESPONDING THIO PHOSPHATES AND DERIVATIVES THEREOF

Daniel Demosay, Villeurbanne; Daniel Pillon, and Jacques Ducret, both of Lyon, all of France, assignors to Pechiney-Progil, Lyon, France

Filed Aug. 11, 1969, Ser. No. 849,139
Claims priority, application Great Britain, Aug. 9, 1968, 38,130/68
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 K **13 Claims**

An insecticidal composition having the formula:



(1)

and a process for preparing it are described.

The process consists of reacting a halide salt having the formula

with hydroxy-4 methyl-2 pyridine.

In practical use the composition is diluted with acetone. It is active against a large variety of insects and mites.

3,669,976

2-HYDROXY-AND 2-MERCAPTO-5-THIAZOLINYL-2′-PYRIDINES

Kurt Gubler; Urs Meyer, both of Riehen, and Hans Ulrich Brechbuhler, Basel, all of Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

Original application Sept. 25, 1968, Ser. No. 762,653, now Patent No. 3,535,325, dated Jan. 8, 1971. Divided and this application June 23, 1970, Ser. No. 53,417
Claims priority, application Switzerland, Sept. 29, 1967, 13636/67
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 D **1 Claim**

Pyridyl-(2)-phosphates and phosphorothicates are disclosed which have in 5-position at the pyridine nucleus a thiazolinyl-(2) grouping and which are insecticidal and acaricidal agents useful in the control of insects and Acarinae, and more particularly of cattle ticks. Compositions containing these novel compounds, methods for controlling insects and Acarinae therewith, and novel 2-hydroxy- and 2-mercapto-5-thiazolinyl-(2′)-pyridines useful as intermediates in their production are also described.

3,669,977

NOVEL CYCLIC COMPOSITIONS

Giuliana C. Tesoro, Dobbs Ferry, N.Y., assignor to J. P. Stevens & Co., Inc., New York, N.Y.

Original application June 8, 1967, Ser. No. 644,546, now Patent No. 3,512,922, dated May 19, 1970. Divided and this application Feb. 24, 1970, Ser. No. 16,996
Int. Cl. C07d *91/68*
U.S. Cl. 260—301 **4 Claims**

This invention concerns the preparation of novel cyclic N,N′-substituted sulfamide derivatives and to their application to hydroxyl-containing polymeric substrates as modifying agents.

3,669,978

PROCESS FOR THE PRODUCTION OF SEMI-SYNTHETIC PENICILLIN INTERMEDIATE

Robert P. Deist, Malvern, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed May 28, 1970, Ser. No. 41,567
Int. Cl. C07d *99/10, 99/16*
U.S. Cl. 260—301 **6 Claims**

A novel process for the preparation of an intermediate mixture which is useful in the production of penicillanic acid derivatives is described. The main component of the intermediate mixture is 2-[(6-amino-3,3-dimethyl-7-oxo-4-thia-1-azabicyclo[3,2,0 hept-2-yl) carbonyl]-1, 2-benzisothiazol-3(2H)-one-1,1-dioxide hydrochloride.

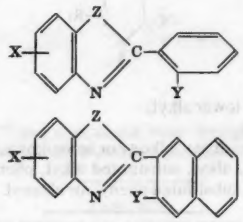
3,669,979

NOVEL PROCESS FOR THE PRODUCTION OF 2-BENZOTHIAZOLYL-PHENOL AND DERIVATIVES THEREOF EMPLOYING PHOSPHORUS TRICHLORIDE AS A CATALYST

Harlan B. Freyermuth, Easton, Pa., assignor to GAF Corporation, New York, N.Y.

Filed Dec. 14, 1967, Ser. No. 690,376
Int. Cl. C07d *91/44, 85/48, 49/38*
U.S. Cl. 260—304 **6 Claims**

A method of preparing heterocyclic derivatives selected from the formulae:



wherein X is selected from hydrogen, lower alkyl, lower alkoxy, and halogen; Y is selected from hydroxy and X; Z is selected from nitrogen, oxygen, and sulfur by reacting an o-aminobenzenethiol, o-aminophenol, or o- aminoaniline and substituted derivatives thereof with an ortho-substituted benzoic acid or 2-substituted naphtholic acid in the presence of a catalyst comprising phosphorus trichloride. The compounds produced by the process of the present invention are useful as stabilizers in various organic media, e.g., organic plastics, oils, etc. and as intermediates in the production of dyestuffs and fluorescent compounds.

3,669,980

2-AMIDO-6-AMINO PENICILLANIC ACIDS AND RELATED COMPOUNDS

Richard Bogash, Philadelphia; Milton Wolf, West Chester, and John H. Sellstedt, King of Prussia, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed July 22, 1969, Ser. No. 843,783
Claims priority, application Great Britain, Sept. 17, 1968, 44,184/68
Int. Cl. C07d *99/16, 99/24*
U.S. Cl. 260—304 **6 Claims**

This invention concerns 2-amido-6-aminopenicillanic acids, 2-amido-6-haloimidopenicillins, 2-amido-6-alkoxyimidopenicillins, 2-amido-7-amino-cephalosporanic acids, 2-amido-7-haloimido-cephalosporins and 2-amido-7-alkoxyimido-cephalosporins which are useful as intermediates in the preparation of synthetic penicillins and cephalosporins having potent antibiotic activity. Further, it relates to a

process for the preparation of these intermediates from penicillins and cephalosporins. Still further, it concerns the preparation of 6-aminopenicillanic acid and 7-aminocephalosporanic acid by the respective hydrolysis of 2-amido-6-aminopenicillanic acids and 2-amido-7-aminocephalosporanic acids.

3,669,981

S-CHLOROMETHYL COMPOUNDS OF 2-MERCAPTOBENZOTHIAZOLES, 2-MERCAPTOBENZOXAZOLES, AND 2-MERCAPTOBENZIMIDAZOLES

John D. Pera, and Fred W. Raths, both of Memphis, Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.

Filed Oct. 30, 1969, Ser. No. 872,732
Int. Cl. C07d *91/44, 85/48, 49/38*
U.S. Cl. 260—306 **10 Claims**

S-chloromethyl compounds of 2-mercaptobenzothiazoles, 2- mercaptobenzoxazoles, and 2- mercaptobenzimidazoles prepared by reacting a metal salt of 2-mercaptobenzothiazole, 2- mercaptobenzoxazole, 2- mercaptobenzimidazoles, or substituted compounds thereof with bromochloromethane in an aqueous system in the presence of a surfactant are useful as intermediates.

3,669,982

METHOD FOR PREPARING 1,3,4-THIADIAZOLE-2-YLUREAS

Tony Cebalo, Allentown, and John Alderman, Alburtis, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 5, 1970, Ser. No. 830
Int. Cl. C07d *91/62*
U.S. Cl. 260—306.8 D **15 Claims**

Certain 2-alkylamino-1,3,4-thiadiazole compounds are reacted with phosgene in the presence of boron trifluoride, the reaction product of which is subsequently reacted with a secondary amine to provide fully substituted 1,3,4-thiadiazol-2-ylurea compounds.

3,669,983

PYRAZOLOTHIAZEPINES AND ISOXAZOLOTHIAZEPINES

Leo Ralph Swett, and James Daniel Ratajczyk, both of Waukegan, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of application Ser. No. 750,430, Aug. 1, 1968, now abandoned. This application Aug. 20, 1970, Ser. No. 65,698
Int. Cl. C07d *85/22*
U.S. Cl. 260—307 H **11 Claims**

7,8-Dihydro-4-oxopyrazolo[3,4-d] [1,3]thiazepines which may be substituted in the 1-, 3-, 5-, 7- and/or 8- position and the corresponding isoxazolo[5,4-d] [1,3]thiazepines which may be substituted in the 3-, 5-, 7- and/or 8- position are prepared by converting a 5-aminopyrazole which may be substituted in the 1- and/or 3-positions or a 5-aminoisoxazole which may be substituted in the 3-position into a Schiff base and subsequent condensation of the Schiff base with thioglycolic acid or a substituted thioglycolic acid. The new compounds are useful anti-inflammatories.

3,669,984

PROCESS FOR THE PREPARATION OF 4-METHYL-5-ALKOXY-OXAZOLES

Sidney Frank Schaeren, Benken, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 12, 1970, Ser. No. 19,110
Claims priority, application Switzerland, Mar. 25, 1969, 4464/69
Int. Cl. C07d *85/44*
U.S. Cl. 260—307 R **6 Claims**

A process for the preparation of 4-methyl-5-alkoxy-oxazoles from 5-alkoxy-4-oxazolylacetic acids, which products are useful as intermediates for the preparation of pyridoxine. The starting materials are heated at a temperature of 100°–150°C. in the presence of a dienophile (A-HC=CH-B, wherein A and B are trans and each is an electron-withdrawing group) until evolution of CO_2 ceases.

3,669,985

1,3,2-OXAZABORINIDES AND METHOD FOR PREPARING THE SAME

Thuraiajah Padmanathan, Highland Park, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Original application May 27, 1968, Ser. No. 732,045. Divided and this application Oct. 21, 1970, Ser. No. 82,820
Int. Cl. C07d *27/44*
U.S. Cl. 260—310 A **1 Claim**

Condensed difluoro or diacetoxy 1,3,2-oxazaborinides are prepared by treating (a) a condensation product of a naphthostyril with an active ketomethylene compound, such as barbituric acid or its N,N-dialkyl derivatives, an indandione, an oxindole or a pyrazolone, (b) a condensation product of an o-hydroxybenzaldehyde with an aromatic amine, or (c) an ortho-(benz-azol-2yl)-naphthol or phenol, the azole being oxazole, thiazole or imidazole, with either (1) boron trifluoride dissolved in ether, or (2) orthoboric acid, benzeneboronic acid or esters thereof, in acetic acid in the presence of acetic anhydride, at reflux. The difluoro and diacetoxy-1,3,2-oxazaborinides are characterized by affinity for polyesters when applied by disperse dyeing methods and fluoresce on the fiber. Similar effects are obtained on nylon and acetate and to some extent on modified polyacrylonitrile.

3,669,986

SUBSTITUTED DISPIROPENTADECANES

Herschel D. Porter, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of application Ser. No. 702,820, Feb. 5, 1968, now Patent No. 3,534,054. This application Feb. 27, 1970, Ser. No. 15,265
Int. Cl. C07d *27/08, 31/44*
U.S. Cl. 260—326.5 D **4 Claims**

Novel substituted dispiropentadecanes having activity as central nervous system depressants, vasodilators, anti-inflammatory agents in animals, and as soil fungicides.

3,669,987

SALTS OF INDOLE DERIVATIVES AND A PROCESS FOR PREPARING THE SAME

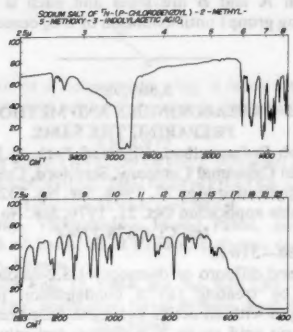
Nobuyasu Sato, Itami-shi; Toshio Nakamura, and Hiroshi Takenaka, both of Ibaragi-shi, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Apr. 9, 1968, Ser. No. 719,939
Claims priority, application Japan, Apr. 11, 1967, 42/23337
Int. Cl. C07d *27/56*
U.S. Cl. 260—326.13 A **4 Claims**

Alkali metal salts or organic amine molecular compounds of such 1-acyl-3-indolylaliphatic acid derivatives as 1-(p-chlorobenzoyl)-2-methyl-5-methoxy-3-indolylacetic acid, 1-cinnamoyl-2-methyl-5-methoxy-3-indolylacetic acid or 1-nicotinoyl-2-methyl-5-methoxy-3-indolylacetic acid are prepared by dissolving about 1 mole of said 1-acyl-3-indolylaliphatic acid derivative in acetone or methanol, reacting in the presence of a small amount of water the resultant solution with about 0.5 mole of alkali metal carbonate, or about 1 mole of alkali metal bicarbonate or with about 1 mole of an organic amine and distilling off acetone or methanol and water from the reaction mixture to yield the alkali metal salt or organic amine molecular compound.

Alkaline earth metal or aluminum salt or said 1-acyl-3-indolylaliphatic acid derivative is prepared by reacting a soluble salt of alkaline earth metal or aluminum with an aqueous

solution containing said alkali metal salt of 1-acyl-3-indolylaliphatic acid derivative. These alkali metal salts or or-



ganic amine molecular compounds are enable to make solid injections for anti-inflammatory drugs.

3,669,988

METHOD OF ISOLATING AND PURIFYING SULPHONEPHTHALEIN DERIVATIVES OF IMINODIACETIC ACID AND ITS SALTS

Antonin Emr, and Rudolf Pribil, both of Praque, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Praque, Czechoslovakia

Filed Oct. 22, 1968, Ser. No. 769,703
Claims priority, application Czechoslovakia, Oct. 25, 1967, 7549-67
Int. Cl. C07d *89/06*
U.S. Cl. 260—327 S **4 Claims**

Object of the invention is isolation and purification of sulphonephthalein derivatives of iminodiacetic acid, prepared in the known manner by condensing sulphonephthaleins having free 3 and 3′ positions, with formaldehyde and iminodiacetic acid. The method consists in precipitating aqueous solutions of alkali metal salts of said derivatives as insoluble salts with bivalent cations selected from the group consisting of barium, calcium and strontium, isolating the precipitate in pure condition by washing, dissolving the precipitate in an acid, precipitating said bivalent cations, separately the filtrate, adding alkali metal cations to the resulting liquid and isolating the sulphonophthalein derivative of iminodiacetic acid in the form of its alkali metal salt by adding a water-miscible non-solvent such as ethanol and separating, washing and drying the precipitate.

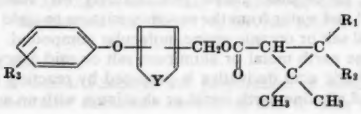
3,669,989

CYCLOPROPANECARBOXYLIC ACID ESTERS

Nobushige Itaya, Minoo-shi; Katsuzo Kamoshita, Toyonaka-shi; Toshio Mizutani, Hirakata-shi; Shigeyoshi Kitamura, Toyonaka-shi; Shinji Nakai; Nobuyuki Kameda, both of Takarazuka-shi; Keimei Fujimoto, Kyoto, and Yositosi Okuno, Toyonaka-shi, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed May 26, 1969, Ser. No. 827,903
Claims priority, application Japan, June 13, 1968, 43/41107; 43/41108
Int. Cl. C07d *63/12, 5/16*
U.S. Cl. 260—332.2 R **7 Claims**

Novel phenyloxy-furylmethyl or -thenyl 2,2-dimethyl 3-substituted cyclopropane carboxylate of the formula:



wherein R_1 is a hydrogen atom or methyl group; R_2 is methyl, 2-methyl-1-propenyl, 2-methoxycarbonyl-1-propenyl, phenyl or 3,4-methylenedioxyphenyl group when R_1 is a hydrogen atom, or methyl group when R_1 is methyl group; R_3 is a hydrogen or a halogen atom or methyl group; and Y is an oxygen or a sulfur atom; which carboxylate is useful as an insecticide and is prepared by the esterification of the reactive derivatives of the carboxylic acid with the furylmethyl or thenyl compounds.

3,669,990

HETEROCYCLIC ORGANO-ALUMINUM COMPOUNDS AND THEIR PREPARATION

Lawrence H. Shepherd, Jr., Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,740
Int. Cl. C07d *15/10*
U.S. Cl. 260—340.6 **21 Claims**

Organoaluminum compounds possessing an alumina-2-oxacyclo-oct-4-ene moiety having a vinylic substituent in the seven position are described. These are prepared by reacting an oxacyclopent-3-ene with a nonionic organoaluminum compound possessing an aluminacyclopent-3-ene moiety, preferably in the presence of a stable Lewis Base. The compound possessing the aluminacyclopent-3-ene moiety may be used in preformed condition or it may be formed in situ during the course of a one-step reaction. The compounds possessing the 7-vinylic alumina-2-oxacyclooct-4-ene moiety yield novel alkadienols on hydrolysis.

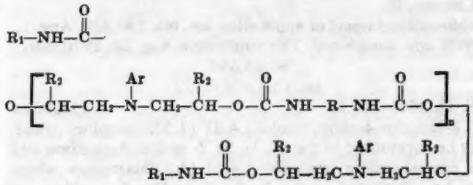
3,669,991

N-ARYL-SUBSTITUTED DIALKANOLAMINO-POLYURETHANES

Erich Elmers, Krefeld, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany, F 52853

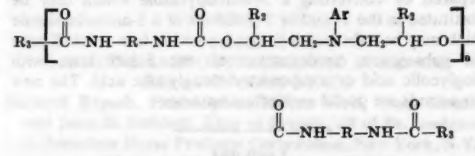
Continuation-in-part of application Ser. No. 735,511, June 10, 1968, now abandoned. This application Sept. 25, 1970, Ser. No. 75,714
Claims priority, application Germany, July 4, 1967, F 52 853
Int. Cl. C08g *41/04, 22/06*
U.S. Cl. 260—34.2 **9 Claims**

The invention relates to N-aryl-substituted dialkanolamino-polyurethane compounds containing alkyl or aryl terminal groups and corresponding to the formula



I

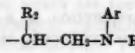
or



II

in which Ar denotes aryl, R is alkylene or arylene, R_1 is alkyl, allyl methoxymethyl or aryl, R_2 is H or $-CH_3$, R_3 is $-O-R_4$ or $-S-R_4$ or

R_4 is alkyl or



R_5 is H or alkyl or aryl, R_6 is alkyl or aryl, n is 1 to about 10, preferably 1 to about 5, and a process for their production.

3,669,992

PREPARATION OF AMINOTETRAHYDROPYRANS

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Apr. 18, 1968, Ser. No. 722,193
Int. Cl. C07d *7/04*
U.S. Cl. 260—345.1 **8 Claims**

Aminotetrahydropyrans are prepared by reacting halotetrahydropyrans with ammonia or certain primary or secondary amines in the presence of water and an alcohol generally within a temperature range of from 100° to 500° C. These aminotetrahydropyrans and useful as spasmolytic antihistamine drugs.

3,669,993

HIGH TEMPERATURE BIS(EPOXYALKYL) CARBORANE ADHESIVES

Robert L. Barnes, Clifton, and Daniel Grafstein, Morristown, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed Sept. 25, 1968, Ser. No. 762,614
Int. Cl. C07d *109/02, 107/02*
U.S. Cl. 260—348 R **6 Claims**

The process of providing an adhesive junction between two workpieces having opposing smooth surfaces comprising the steps of mixing material selected from the group consisting of bis(epoxybutyl)carborane, bis(epoxypentyl)carborane, and bis(epoxyhexyl)carborane, with a curing agent selected from the group consisting of boron trifluoride ethylamine and 4,4'-diaminodiphenylsulfone, applying said mixture to the opposing surfaces, joining the surfaces and allowing the workpieces with the mixture therebetween to harden under heat and pressure.

3,669,994

ANTHRAQUINONE DYESTUFFS

Edwin Dennis Harvey, Manchester, and Frank Lodge, Huddersfield, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of application Ser. No. 724,632, Apr. 4, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 436,381, Mar. 1, 1965, now abandoned. This application Jan. 6, 1970, Ser. No. 1,047
Claims priority, application Great Britain, Mar. 25, 1964, 12,680/64
Int. Cl. C09b *1/50, 1/54*
U.S. Cl. 260—380 **3 Claims**

Mixtures of disperse anthraquinone dyestuffs which are obtained by reacting a leuco derivative of a 1:5-dihydroxy-4:8-di(amino, hydroxy or alkylamino) -2-(hydroxyaryl or alkoxyaryl)anthraquinone with an aldehyde, and the use of the said mixtures for coloring synthetic textile materials.

3,669,995

POLY(ORGANOTIN) MERCAPTIDE POLYMERS AND RESINS STABILIZED THEREWITH

Joseph Fath, and Donald L. Deardorff, both of Barrington, R.I., assignors to Teknor Apex Company

Original application July 26, 1966, Ser. No. 568,061, now Patent No. 3,518,223. Divided and this application Oct. 30, 1969, Ser. No. 870,786
Int. Cl. C08f *45/62*
U.S. Cl. 260—399 **12 Claims**

Poly(organotin) mercaptide condensation polymers useful as stabilizer for vinyl resins are prepared by reacting an organotin compound with a polyfunctional polymercapto ester derived from a polyhydric alcohol containing more than two hydroxyl groups, which is esterified with a mercapto acid so as to leave one hydroxyl group unesterified, and the latter is esterified with an aliphatic or aromatic monocarboxylic acid.

3,669,996

11-HALO-10-OYO-3,7,11-TRIALKYL-2-ALKENOIC AND 2,6-ALKADIENOIC ACIDS AND ESTERS THEREOF

John B. Siddall, 975 California Avenue, Palo Alto, Calif., and Jean Pierre Calame, Brandholzstrasse 1, 8117, Fallanden, Switzerland

Division of application Ser. No. 23,512, Mar. 27, 1970, which is a continuation-in-part of application Ser. No. 666,461, Sept. 8, 1967, now abandoned. This application July 2, 1970, Ser. No. 52,137
Int. Cl. C07c *69/66;* **A01n** *9/24*
U.S. Cl. 260—408 **13 Claims**

Hydrocarbon carboxylic acids, esters, alcohols, ethers, amides and dialkyl phosphonates with a carbon atom chain length of from 12 to 17 carbon atoms substituted at C–6 and/or C–10 with ketal groups, and which are substituted at C–3, C–7 and C–11 with (lower)alkyl or (lower)alkylidene groups optionally saturated or unsaturated between C–2,3 and/or C–5, 6 or C–6,7 or C–7,8 and/or C–9,10 or C–10,11 or C–11,12, or optionally substituted with fused groupings at C–2,3 and/or c–6,7 or C–10,11 and optionally substituted at each of positions C–2,3,6,7,10 and 11, are arthropod maturation inhibitors.

3,669,997

10-OXO-11-ALKYLIDENE-337-DIALKYL-2,6-ALKADIENOIC ACIDS AND ESTERS THEREOF

Jean Pierre Calame, Fallanden, Switzerland, and John B. Siddall, Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of application Ser. No. 666,461, Sept. 8, 1967, now abandoned. This application Mar. 27, 1970, Ser. No. 23,512
Int. Cl. C07c *69/66;* **A01n** *9/24*
U.S. Cl. 260—410.9 R **8 Claims**

Hydrocarbon carboxylic acids, esters, alcohols, ethers, amides and dialkyl phosphonates with a carbon atom chain length of from 12 to 17 carbon atoms substituted at C–6 and/or C–10 with keto groups, and which are substituted at C–3, C–7 and C–11 with (lower) alkyl or (lower) alkylidene groups optionally saturated or unsaturated between C–2,3 and/or C–5,6 or C–6,7 or C–7,8 and/or C–9,10 or C–10,11 or C–11,12, or optionally substituted with fused groupings at C–2,3 and/or C–6,7 or C–10,11, and optionally substituted at each of positions C–2,3,6,7,10 and 11, are arthropod maturation inhibitors.

3,669,998

CHLORO-NITRO SUBSTITUTED PHENYL ESTERS OF ALIPHATIC ACIDS

Takashi Munekata, and Eizaburo Uchida, both of Iwaki-shi, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 19, 1967, Ser. No. 647,195
Claims priority, application Japan, June 21, 1966, 41/40254; Mar. 14, 1967, 42/16017; May 17, 1967, 42/31333
Int. Cl. C07c *69/24, 69/62*
U.S. Cl. 260—410.5 **12 Claims**

There are disclosed herein chloro-nitrophenyl esters of aliphatic acids having fungicidal activity.

3,669,999

STORAGE STABILITY OF TETRAKIS NICKEL COMPOUNDS

Ralph Levine, Freehold, N.J., assignor to Cities Service Company, New York, N.Y.

Filed Dec. 4, 1970, Ser. No. 95,325
Int. Cl. C07f *75/04*
U.S. Cl. 260—439 R **6 Claims**

The storage stability of tetrakis nickel compounds, such as tetrakis (triorganophosphite) nickel compounds, can be increased by storing said compounds under a protective blanket selected from alcohols and aliphatic hydrocarbons.

3,670,000

PROCESS OF PRODUCING DIFFICULTY SOLUBLE METAL GLUCONATES

Otto Zeiss, Schwetzingen, Germany, assignor to Joh. A. Benckiser GmbH, Chemische Fabrik, Ludwigshafen/Rhine, Germany

Filed June 19, 1970, Ser. No. 47,724
Int. Cl. C07j *15/02*; C07c *59/10*
U.S. Cl. 260—439 R 8 Claims

Difficulty soluble metal gluconates are obtained by passing a monovalent metal gluconate solution through a cation exchange material charged with the metal ion corresponding to the metal ion of the difficulty soluble metal gluconate.

3,670,001

ORGANOALUMINUM HALIDES AND THEIR PREPARATION

Lawrence H. Shepherd, Jr., Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

Filed July 2, 1970, Ser. No. 52,077
Int. Cl. C07f *5/06*
U.S. Cl. 260—448 A 41 Claims

Organoaluminum halides in which the aluminum atom carries a substituted allylcarbinyl group or a substituted cyclopropylcarbinyl group are formed by reacting an aluminacyclopent-3-ene moiety with a primary aliphatic monohalide. The resultant organoaluminum halides are versatile intermediates. Hydrolysis yields substituted 1-alkenes and ring substituted methylcyclopropanes, respectively. Novel classes of substituted cyclopropanes are producible in this manner.

3,670,002

OXIDATION OF THIOLS TO THIOLSULFONATES AND SULFONIC ACIDS

Ming Nan Sheng, Cherry Hill, N.J., and John G. Zajacek, Strafford, Pa., assignors to Atlantic Richfield Company, New York, N.Y.

Continuation-in-part of application Ser. No. 703,907, Feb. 8, 1968, now abandoned. This application Feb. 20, 1970, Ser. No. 13,180
Int. Cl. C07c *143/00*
U.S. Cl. 260—453 R 10 Claims

Method for the oxidation of thiols to produce thiolsulfonates or sulfonic acids using an organic hydroperoxide as the oxidizing agent and a molybdenum-containing catalyst.

3,670,003

PREPARATION OF PHENYLENE DIISOCYANATE BY THERMAL DECOMPOSITION OF CORRESPONDING DINITRILE SULFITE

Alvin E. Trevillyan, Glenwood, and Ivars Vecbastiks, Park Forest, both of Ill., assignors to Atlantic Richfield Company, New York, N.Y.

Filed June 12, 1969, Ser. No. 832,857
Int. Cl. C07c *119/04*
U.S. Cl. 260—453 P 16 Claims

A solvent system employed in the preparation of phenylene diisocyanates in high yields and purity from phenylene di(nitrile sulfites) wherein the nitrile sulfite groups are either meta or para to each other, is disclosed. The solvents employed are paraffinic hydrocarbons often having about 4 to 16 carbon atoms. Solvent recycle is advantageously employed in the decomposition of, for instance, benzene-1,4-di(nitrile) sulfite) to improve product yield without decreasing purity.

3,670,004

THIOCYANO SUBSTITUTED ACRYLATES AND PROPIONATES AND THEIR USE AS PESTICIDES

Stanley J. Buckman; John D. Buckman; John D. Pera, and Fred W. Raths, all of Memphis, Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.

Filed Jan. 7, 1969, Ser. No. 789,620
Int. Cl. C07c *161/02*
U.S. Cl. 260—454 13 Claims

The new compounds 2-thiocyanoacrylates, 2-thiocyano-2,3-dibromopropionates, and 2-thiocyano-2,3-dichloropropionates, which are useful as pesticides, and methods of preparing the same are described.

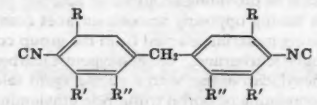
3,670,005

DIPHENYLMETHANE POLYISONITRILES

Ivar Ugi, Leverkusen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of application Ser. No. 588,656, Sept. 26, 1966, now abandoned, which is a continuation of application Ser. No. 264,707, Mar. 12, 1963, now abandoned. This application Mar. 11, 1970, Ser. No. 17,999
Int. Cl. C07c *119/02*
U.S. Cl. 260—465 G 7 Claims

A symetrical polyisonitrile of the formula



wherein R is hydrogen or alkyl containing one to three carbon atoms inclusive

R′ is hydrogen, alkyl containing one to three carbon atoms inclusive or chloro

R″ is hydrogen or —NC.

3,670,006

AMMOXIDATION OF SATURATED HYDROCARBONS

Keith M. Taylor, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 17, 1969, Ser. No. 877,468
Int. Cl. C07c *121/02*
U.S. Cl. 260—465.3 5 Claims

Method for the production of acrylonitrile or methacrylonitrile from propane or isobutane employing a catalyst containing antimony, uranium and tungsten.

3,670,007

AMINOMALONITRILE AND METHOD OF PREPARATION THEREOF

James P. Ferris, Troy, N.Y., assignor to The Salk Institute for Biological Studies, San Diego, Calif.

Continuation-in-part of application Ser. No. 506,415, Nov. 4, 1965, now abandoned. This application Nov. 21, 1967, Ser. No. 684,649
Int. Cl. C07c *121/20*
U.S. Cl. 260—465.5 10 Claims

The chemical aminomalononitrile and methods for making it comprising reacting oximinomalononitrile or phenazomalononitrile with approximately stoichiometric amounts of one of the group consisting of unoxidized aluminum, zinc and sodium dithionite. Formation of aminomalononitrile using zinc must take place in an acid solution. In each case, the reaction mixture is externally cooled until the initial exothermic reaction is substantially complete. Preferably, the aminomalononitrile so formed is isolated as a salt such as the hydrochloride, hydrobromide and toluenesulfonate.

3,670,008

AMMOXIDATION OF SATURATED HYDROCARBONS

Keith M. Taylor, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of application Ser. No. 801,789, Feb. 24, 1969, now abandoned. This application Dec. 21, 1970, Ser. No. 100,482

Int. Cl. C07c *121/32*

U.S. Cl. 260—465.3 4 Claims

Method for the production of acrylonitrile or methacrylonitrile from propane or isobutane employing a catalyst containing iron and bismuth.

3,670,009

AMMOXIDATION OF SATURATED HYDROCARBONS

Keith M. Taylor, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of application Ser. No. 788,084, Dec. 30, 1968, now abandoned. This application Dec. 21, 1970, Ser. No. 100,548

Int. Cl. C07c *121/02*

U.S. Cl. 260—465.3 4 Claims

Method for the production of acrylonitrile or methacrylonitrile from propane or isobutane employing a catalyst containing the oxides of molybdenum, boron and tin.

3,670,010

TRIFLUOROMETHYL ACYLATED UREA CARBAMATES

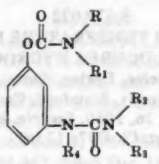
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Filed May 6, 1969, Ser. No. 822,316

Int. Cl. C07c *125/06*

U.S. Cl. 260—479 C 4 Claims

Acylated urea carbamate compounds having the formula



in which R_1 and R_3 are independently selected from an alkyl radical of from 1 to about 8 carbon atoms, inclusive, cyclohexyl, lower alkenyl of from about 3 to about 4 carbon atoms, inclusive, phenyl and substituted phenyl in which the substituents are lower alkyl, lower alkoxy, nitro and halogen; R and R_2 are independently selected from hydrogen, alkyl of from 1 to about 8 carbon atoms, inclusive, cyclohexyl, lower alkenyl of from about 3 to about 4 carbon atoms, inclusive, and trifluoroacetyl; provided that at least one of R or R_2 is trifluoroacetyl; and R_4 is selected from hydrogen, methyl or when only one of R or R_2 is trifluoroacetyl then R_4 can be trifluoroacetyl. These compounds are prepared by the reaction of an appropriate carbamoyloxyphenyl urea and trifluoroacetic anhydride. The compounds are useful as herbicides.

3,670,011

ACETOACETATE OF 2-HYDROXYMETHYL-5-NORBORNENE

Anthony Gifford Moody, and Robert Owen Symcox, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Original application Aug. 28, 1967, Ser. No. 663,546, now Patent No. 3,520,843, dated July 21, 1970. Divided and this application Mar. 27, 1970, Ser. No. 22,688

Claims priority, application Great Britain, Sept. 5, 1966, 39,583/66

Int. Cl. C07c *69/72*

U.S. Cl. 260—483 1 Claim

1. The acetoacetate of 2-hydroxymethyl-5-norbornene.

3,670,012

PROCESS FOR PRODUCING ACRYLIC ESTER

Shichiro Shoda; Nobuo Ito, and Toshiro Miki, all of Nagoya, Japan, assignors to Tongosei Chemical Industry Co., Ltd., Tokyo, Japan

Filed May 27, 1969, Ser. No. 828,115

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 AC 8 Claims

A process for producing acrylic ester, which comprises reacting with each other in liquid phase acetylene, carbon monoxide, nickel carbonyl, an acid and an alcohol, characterized in that the concentration of nickel carbonyl in the reaction liquid is 10 to 40 percent by weight and that the reaction is 10° to 30° C.

In accordance with the present process, it has been found that the amount of propionic ester produced by side reaction becomes conspicuously small.

3,670,013

SYNTHESIS OF PARTIAL ESTERS OF CERTAIN POLY(NEOPENTYL POLYOLS) AND ALIPHATIC MONOCARBOXYLIC ACIDS

Raymond T. Leibfried, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Oct. 16, 1969, Ser. No. 867,087

Int. Cl. C07c *67/00*

U.S. Cl. 260—488 J 6 Claims

Disclosed is a process for partially esterifying certain neopentyl polyol material with certain aliphatic monocarboxylic acid material, and for condensing the resulting partial esters. The partial esterification and condensation are carried out substantially simultaneously in a reaction zone in a temperature range in which (1) substantially all of the water formed in the esterification and condensation reactions evaporates from the reaction mixture as it is formed, and (2) aliphatic monocarboxylic acid material evaporates to blanket the reaction mixture with aliphatic monocarboxylic acid vapor with sufficient heat to minimize condensation and return of water vapor in the reaction zone above the reaction mixture to the reaction mixture.

3,670,014

PROCESS FOR THE MANUFACTURE OF ALLYL ESTERS OF CARBOXYLIC ACIDS

Hans Fernholz, Fischbach/Taunus; Hans-Joachim Schmidt, Frankfurt am Main, and Friedrich Wunder, Florsheim am Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed July 16, 1969, Ser. No. 842,329

Claims priority, application Germany, July 19, 1968, P 17 68 984.8; Nov. 2, 1968, P 18 06 761.3

Int. Cl. C07c *67/04*

U.S. Cl. 260—497 A 7 Claims

Preparation of allyl esters of carboxylic acids in the gaseous phase by reacting propylene, oxygen and carboxylic acids at elevated temperatures in the presence of a catalyst consisting of an inert carrier and a salt of a noble metal of the 8th group of the periodic system and 0.01 to 20 per cent by weight of bismuth.

3,670,015

ETHANECARBONYL-1,2-DIPHOSPHONIC ACID, WATER-SOLUBLE SALTS THEREOF AND PROCESS FOR PREPARATION

James B. Prentice, Ripley, Ind., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 23, 1968, Ser. No. 786,428

Int. Cl. C07f *9/38*; C11d *3/36*

U.S. Cl. 260—502.4 P 9 Claims

A process for preparing ethane carbonyl-1,2-diphosphonates which comprises reacting 2-haloethane-1-

hydroxy-1,1-diphosphonic acid with at least 3 equivalents of a base having a pK_b up to about 10. This process yields a salt of ethane carbonyl-1,2-diphosphonic acid which can be converted to the free acid.

3,670,016

PROCESS FOR PREPARING ACRYLIC OR METHACRYLIC ACID

Jacob Ackermann, Gorla Minore; Roberto Croce, Erba, and Riccardo Reguzzoni, Busto Arsizio, all of Italy, assignors to Societa Italiana Resine S.p.A., Milan, Italy

Filed June 16, 1969, Ser. No. 833,749

Claims priority, application Italy, June 24, 1968, 18117 A/68

Int. Cl. C07c *57/04*

U.S. Cl. 260—526 N **13 Claims**

Preparing acrylic or methacrylic acid by mixing a polyoxymethylene methyl or ethyl diester with a carboxylic acid corresponding to that present in ester form in the diester, the mixture is vaporized at 180° to 400°C, and the vapors passed at 180° to 450°C over a catalyst, namely an aluminum or magnesium silicate or the like or an oxide, hydroxide or carbonate of a metal of group Ia or IIa, or boron or aluminum.

3,670,017

PRODUCTION OF UNSATURATED ALIPHATIC ACIDS

William John Ball, Capel, and Edward James Gasson, Kingswood, both of England, assignors to The Distillers Company Limited, Edinburgh, Scotland

Continuation of application Ser. No. 596,086, Nov. 22, 1966, now abandoned. This application Jan. 12, 1971, Ser. No. 105,952

Claims priority, application Great Britain, Dec. 16, 1965, 53,552/65

Int. Cl. C07c *51/32*

U.S. Cl. 260—530 N **7 Claims**

This invention has to do with a process for preparing (meth)acrylic acid by reacting (meth)acrolein and molecular oxygen in the vapor phase at elevated temperature in the presence of a catalyst composition consisting essentially of antimony, molybdenum, vanadium, cobalt and oxygen.

3,670,018

(ARYLOXYARYL) ARYLPHOSPHORUS COMPOUNDS

Ira B. Johns, Marblehead, Mass., assignor to Monsanto Research Corporation, St. Louis, Mo.

Original application May 28, 1965, Ser. No. 459,931, now Patent No. 3,576,861. Divided and this application June 19, 1970, Ser. No. 59,802

Int. Cl. C07f *9/50*

U.S. Cl. 260—545 P **4 Claims**

Cyano (aryloxyaryl) arylphosphines, and cyano(aryloxyaryl) arylphosphine sulfides have been prepared.

3,670,019

CERTAIN N-DIHALOACETYLCYCLOHEXYLAMINES

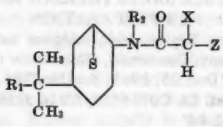
Richard N. Knowles, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 20, 1967, Ser. No. 634,131

Int. Cl. C07c *103/12*

U.S. Cl. 260—561 HL **9 Claims**

N-Dihaloacetylcyclohexylamines of the formula:



wherein

R_1 is hydrogen or alkyl,

R_2 is hydrogen or alkyl,

X is halogen, and

Z is halogen. Typical is N-dichloroacetyl-4-t-butylcyclohexylamine useful for repelling animals.

3,670,020

CATALYTIC CONVERSION OF NITRILES TO AMIDES

Leslie D. Moore, La Grange, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Continuation-in-part of application Ser. No. 551,197, May 19, 1966, now abandoned. This application July 10, 1969, Ser. No. 840,818

Int. Cl. C07c *103/00*

U.S. Cl. 260—561 N **8 Claims**

A method of producing amides by reacting nitriles with water in the presence of certain basic catalysts. It is specifically directed to producing acrylamide from acrylonitrile.

3,670,021

CATALYZED HYDROLYSIS OF NITRILES TO AMIDES

Richard W. Goetz, and Irving L. Mador, both of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Dec. 14, 1967, Ser. No. 690,431

Int. Cl. C07c *103/08*

U.S. Cl. 260—561 R **12 Claims**

Process for the hydrolysis of organic nitriles to form the corresponding amides by a reaction catalyzed by the presence of Group VIII or IIB metal-containing compounds or complexes at a pH range of from about 6.0 to 12.5, and preferably in the presence of a catalyst coordinating compound.

3,670,022

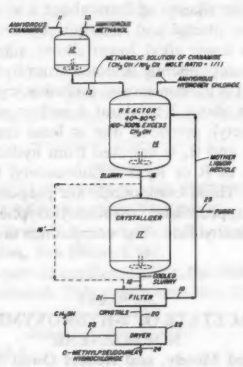
CONTINUOUS HIGH TEMPERATURE PROCESS FOR O-METHYLPSEUDOUREA HYDROCHLORIDE

Frederic Charles Schaefer, Darien, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Nov. 26, 1969, Ser. No. 880,311

Int. Cl. C07c *123/00*

U.S. Cl. 260—564 E **10 Claims**



Anhydrous methanol, cyanamide, and hydrogen chloride are brought into contact in the presence of from about 100 percent to 300 percent excess methanol at temperatures ranging from 40°–80° C. Reaction proceeds rapidly to produce crystals of O-methylpseudourea hydrochloride which are conveniently separated and recovered from the mother liquor. The rapidity of the reaction and the formation of the product as crystals make the process particularly ad-

vantageous for preparing O-methylpseudourea hydrochloride on a continuous basis.

3,670,023

POLYFUNCTIONAL CARBONYL NITRIDE OXIDES

David S. Breslow, Madelyn Gardens, Del., assignor to Hercules Incorporated, Wilmington, Del.

Original application Oct. 4, 1966, Ser. No. 584,113, now Patent No. 3,504,017. Divided and this application May 13, 1969, Ser. No. 839,123

Int. Cl. C07c *131/08*

U.S. Cl. 260—566 A 9 Claims

This invention relates to polyfunctional carbonylnitrile N-oxides and their carbonyl hydroximoyl halide and carbonyl nitrolic acid precursors as new compositions of matter.

3,670,024

PROCESS FOR THE PRODUCTION OF 4,4'-DIAMINODIARYL ALKANES

Heinrich Krimm, Krefeld-Bockum; Artur Botta, and Hermann Schnell, both of Krefeld-Verdingen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of application Ser. No. 485,123, Sept. 3, 1965, now abandoned , and 747,014, July 17, 1968, now abandoned. This application June 24, 1969, Ser. No. 838,045

Int. Cl. C07c *87/50*

U.S. Cl. 260—570 D 5 Claims

Production of 4,4'-diaminodiaryl-alkanes by reacting a ketone and a salt of an aromatic amine at normal pressure, under anhydrous conditions and in a melt of the amine, said diaryl alkanes being useful for the production of plastics, the preparation of polyamides and as hardeners for epoxy resins.

3,670,025

N,N,N',N'-TETRAKIS-(P-DI ACYCLIC HYDROCARBYL-AMINO-PHENYL)-P-ARYLENEDIAMINE

Peter Vincent Susi, Middlesex, and Norma Ann Weston, Somerville, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Original application Jan. 5, 1967, Ser. No. 607,390, now Patent No. 3,484,467, dated Dec. 16, 1969, which is a continuation-in-part of application Ser. No. 333,728, Dec. 26, 1963, now abandoned , which is a continuation-in-part of application Ser. No. 281,056, May 16, 1963, now abandoned. Divided and this application Dec. 6, 1968, Ser. No. 781,973

Int. Cl. C07c *87/50*, *87/64*

U.S. Cl. 260—576 5 Claims

Diaryl-(N,N-diarylaminoaryl)aminium salts represented by the formula:

wherein A, B, D, E and F represent bivalent benzene or bivalent naphthalene radicals; n is 1 or 2; R, R_1, R_2 and R_3 represent hydrogen, alkyl, alkoxy, alkenyl, aralkyl, aryl, alkaryl, acyl or

radicals, said R_4 and R_5 in turn representing hydrogen, alkyl, alkenyl, aralkyl, aryl, alkaryl or acyl radicals; said A, B, D, E and F and R through R_5 which are other than hydrogen being either unsubstituted or substituted with inert groups such as lower alkyl, lower alkoxy, hydroxy, cyano, carboxy, sulfo, halogen and the like; and X^- represents an anion; are useful as infrared absorbers. Illustrative species of the aminium salts are (1) bis(p-diethylaminophenyl)[N,N-bis(p-diethylaminophenyl)-p-aminophenyl]aminium hexafluoroarsenate, (2) bis(p-ethylaminophenyl)[N,N-bis(p-ethylaminophenyl)-p-amino-phenyl]aminium hexafluoroarsenate, (3) bis(p-diethylaminophenyl)[N,N-bis(p-diethylaminophenyl)-4'-aminobiphenylyl]aminium hexafluoroarsenate and (4) bis(4-[bis(2-hydroxyethyl)amino]phenyl)-[N,N-bis(4-[bis(2-hydroxyethyl)amino]phenyl)-4-aminophenyl]aminium hexafluoroantimonate. The salts are made by reacting the appropriate N,N,N',N'-tetrakis(p-dialkylaminophenyl)-p-phenylenediamine with an appropriate silver salt. For example, salt (1) above is made by reacting N,N,N',N'-tetrakis(p-diethylaminophenyl)-p-phenylenediamine with silver hexafluoroarsenate in a solvent, such as dimethylformamide or acetone, and cooling the reaction mixture to precipitate the product salt. The intermediate N,N,N',N'-tetrakis(p-dialkylaminophenyl)-p-phenylenediamine compounds are formed, for example, by reacting p-nitrohalobenzene with p-phenylenediamine to form N,N,N',N'-tetrakis(p-nitrophenyl)-p-phenylenediamine, followed by reduction of the nitro groups to amino groups by hydrogenation in the presence of a catalyst, such as palladium on charcoal, and alkylation of the amino groups with an alkylating agent, such as an alkyl halide. The aminium salts, which absorb broadly in the near-infrared region, may be incorporated into various materials to increase the infrared absorption thereof. A preferred use is the incorporation of the salts into plastics from which optical lenses for sunglasses, welders' goggles and the like are made, such lenses affording protection to the eye against infrared radiation.

3,670,026

UNSATURATED HYDROXY KETONES

Hans Dietmar Lamparsky, Dubendorf, and Roman Marbet, Riehen, both of Switzerland, assignors to Givaudan Corporation, Delawanna, N.J.

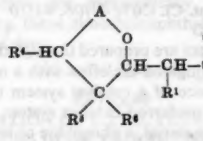
Original application Dec. 7, 1965, Ser. No. 512,216, now Patent No. 3,470,209. Divided and this application Sept. 26, 1968, Ser. No. 794,811

Claims priority, application Switzerland, Dec. 11, 1964, 15996/64

Int. Cl. C07c *49/82*, *49/24*

U.S. Cl. 260—592 11 Claims

Processes and intemediates for novel ketones useful in perfumery on account of their desirable olfactory properties which ketones have the formula:



3,670,027

DETERGENT COMPOSITIONS

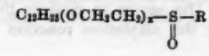
Hill M. Priestley, North Bergen, and James H. Wilson, Demarest, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Original application Aug. 25, 1969, Ser. No. 869,985, which is a continuation of application Ser. No. 647,333, June 20, 1967, now abandoned , which is a continuation-in-part of application Ser. No. 365,487, May 6, 1964, now abandoned , which is a continuation-in-part of application Ser. No 725,505, Apr. 1, 1958, now abandoned , and 60,546, Oct. 5, 1960, now abandoned. Divided and this application Aug. 19, 1970, Ser. No. 65,359

Int. Cl. C07c *49/76*

U.S. Cl. 260—593 R 1 Claim

Novel sulfoxides having the general formula



wherein X is O when R is a monovalent radical selected from the group consisting of glyceryl, acetonyl, 2-chloroethyl, 2-iodoethyl, 2-mercaptomethyl ethyl, 2-methoxyethyl, 2-ethoxy-ethyl, and 2-allyloxyethyl, and X is an integer from 1 to 2 when R is methyl. These sulfoxides are useful as suds-stabilizing additives.

As intermediates for the preparation of sulfoxides that are useful as suds-stabilizing additives, there are also disclosed the compound dodecyloxyethoxyethyl chloride and sulfides having the general formula

$$C_{12}H_{25}(OCH_2CH_2)_x—S—R$$

wherein X is O when R is the monovalent acetonyl radical, and X is an integer from 1 to 2 when R is the methyl radical.

3,670,028

PRODUCTION OF 2-METHYL-2-HEPTEN-6-ONE

Herbert Mueller, Frankenthal/Upper Palatinate; Harald Koehl, and Horst Pommer, both of Ludwigshafen/Rhine, all of Germany, assignors to Badische Anilin-& Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Sept. 20, 1968, Ser. No. 761,328
Int. Cl. C07c *49/20*
U.S. Cl. 260—593 9 Claims

The production of 2-methyl-1-hepten-6-ones (important for organic syntheses of perfumes and carotenoids) by isomerization of 2-methyl-1-hepten-6-one by means of finelly divided palladium or compounds of divalent palladium as isomerization catalysts.

3,670,029

PREPARATION OF UNSATURATED ETHERS

Michael G. Romanelli, New York, N.Y., assignor to Esso Research and Engineering Company

Filed Mar. 19, 1969, Ser. No. 808,672
Int. Cl. C07c *41/06, 41/10*
U.S. Cl. 260—612 D 13 Claims

Unsaturated ethers are prepared through the reaction of C_4 to C_8 aliphatic conjugated diolefins with a monohydroxy alcohol in the presence of a catalyst system based upon zero valent nickel. The preferred catalyst system is made up of a zero valent nickel material, a phosphine or isonitrile activator and further, if desired, an inorganic or organic base cocatalyst. The reaction is conducted at moderate temperature and pressure conditions. The unsaturated ethers can be catalytically hydrogenated to useful ether solvent media.

3,670,030

ALKYLATION OF PHENOLIC COMPOUND

Allen K. Sparks, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Feb. 20, 1970, Ser. No. 13,196
Int. Cl. C07c *37/14*
U.S. Cl. 260—613 D 9 Claims

Water in a controlled concentration is added in the alkylation of a phenolic compound with an olefin in contact with alumina catalyst. This serves to prolong the activity of the catalyst to effect the alkylation reaction and particularly ortho-alkylation.

3,670,031

BENZOHYDROQUINONES

Urs Gloor, Therwil; Rudolf Ruegg, Bottmingen, and Ulrich Schwieter, Reinach, all of Switzerland, assignors to Hoffman-La Roche Inc., Nutley, N.J.

Original application Feb. 14, 1963, Ser. No. 258,609, now Patent No. 3,517,070, dated June 23, 1970, which is a division of application Ser. No. 831,027, Aug. 3, 1959, now Patent No. 3,118,914, dated Jan. 21, 1964. Divided and this application Mar. 19, 1970, Ser. No. 21,176
Claims priority, application Switzerland, Aug. 7, 1958, 62670/58; Aug. 28, 1958, 63369/58; Nov. 4, 1958, 65910/58
Int. Cl. C07c *43/22*
U.S. Cl. 260—613 D 1 Claim

This invention relates to 2,3-dimethoxy-5-methyl-6-geranyl-geranyl-1,4-benzohydroquinones which is an intermediate in the preparation of the corresponding chromanols. This benzohydroquinone and its corresponding chromanols are useful as antioxidants for foodstuffs, feedstuffs, vitamin preparations and the like.

3,670,032

PREPARATION OF UNSATURATED ALCOHOLS AND ETHERS

Michael G. Romanelli, New York, N.Y., assignor to Esso Research and Engineering Company

Filed Mar. 19, 1969, Ser. No. 808,673
Int. Cl. C07c *41/06, 41/10*
U.S. Cl. 260—614 AA 8 Claims

Unsaturated alcohols and ethers are prepared through the reaction of C_4 to C_8 aliphatic conjugated diolefins with water, a lower alkanol or mixtures thereof in the presence of a zero valent palladium based catalyst system. The preferred catalyst is tetrakis(triphenyl-phosphine)palladium alone or in combination with a basic material such as a quaternary ammonium hydroxide. Where one of the coreactants is water, the reaction is conducted in the presence of a solvent. The unsaturated alcohol and ether products can be catalytically hydrogenated to plasticizer alcohols and ether solvent media.

3,670,033

PROCESS FOR THE PREPARATION OF 2,6-DIALKYLPHENOLS

Shin-Ichi Izawa; Katsuyuki Nakamura, both of Tokyo, and Yoshiyuki Mizoguchi, Iruma-gun, all of Japan, assignors to Asahikasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 23, 1969, Ser. No. 818,776
Claims priority, application Japan, May 2, 1968, 43/83622; May 11, 1968, 43/83618
Int. Cl. C07c *37/12*
U.S. Cl. 260—621 R 6 Claims

This invention discloses a process for the preparation of 2,6-dialkylphenols which comprises reacting cyclohexanone with either formaldehyde or acetaldehyde in the vapor phase at a temperature of from 150° to 850° C. in the presence of a particular catalyst.

As a catalyst, a compound of metals of Group Ia of the Periodic Table of the Elements is employed in this invention, and a compound of metals of Group IVa and Va of the Periodic Table of the Elements may be employed, as a promotor, together with the above mentioned catalyst for the purpose of increasing the yield and selectivity of the product.

In contrast with the conventional methods, the present process can be economically and simply carried out to produce 2,6-dialkylphenol in high yield with a great industrial advantage.

3,670,034

PROCESS FOR AROMATIC SUBSTITUTION

Robert E. Robinson, Columbia, S.C., assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 631,917, Apr. 19, 1967, now abandoned, Continuation-in-part of application Ser. No. 282,559, May 23, 1963, now abandoned, Continuation-in-part of application Ser. No. 282,594, May 23, 1963, now abandoned, Continuation-in-part of application Ser. No. 282,595, May 23, 1963, now abandoned. This Application Mar. 21, 1969, Ser. No. 809,379. The portion of the term of the patent subsequent to May, 11, 1988, has been disclaimed.

Int. Cl. C07c *39/24, 25/04*

U.S. Cl. 260—623 H 10 Claims

Substituted aromatic derivatives are prepared by reacting an aromatic compound with a group VIII platinum metal salt wherein the substituent introduced is derived from the anion portion of said group VIII platinum metal salt and said salt is regenerated in situ, in the presence of a source of the anion being introduced into the aromatic compound other than said salt, by oxidation with oxygen or a multivalent transition metal ion which is in its highest valence state.

3,670,035

PREPARATION OF POLYHYDRIC ALCOHOLS FROM CARBOHYDRATES

Robert J. Capik, and Leon W. Wright, both of Wilmington, Del., assignors to Atlas Chemical Industries, Inc., Wilmington, Del.

Original application Mar. 7, 1968, Ser. No. 711,212, now Patent No. 3,538,019, dated Nov. 3, 1970. Divided and this application Jan. 7, 1970, Ser. No. 6,011

Int. Cl. C07c *31/26*

U.S. Cl. 260—635 C 7 Claims

Metalic nickel and finely divided nickel phosphate supported on an inert carrier wherein the total nickel is from 12 to 450° % by weight, based on total weight of catalyst, the phosphate (PO_4) content is from 0.60 to 23 percent by weight, based on the total weight of catalyst, and the ratio of total nickel to phosphorus is greater than 2.84.

3,670,036

STABILIZED METHYLENE CHLORIDE FOR HIGH TEMPERATURE APPLICATIONS

Thomas A. Vivian, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 2, 1970, Ser. No. 8,037

Int. Cl. C07c *17/42, 17/40*

U.S. Cl. 260—652.5 R 10 Claims

Methylene chloride stabilized with 1–10 percent by weight of a nitroalkane, 0.1 to 5 percent by weight of an alkylene oxide and 0–10 percent of a dialkoxyalkane has been found to be especially good for high temperature applications even in continuous or intermittent contact with a reactive metal such as aluminum.

3,670,037

CATALYST SYSTEM

John J. Dugan, Sarnia, Ontario, Canada, assignor to Esso Research and Engineering Company

Filed Feb. 19, 1969, Ser. No. 800,713

Int. Cl. C07c *21/06*

U.S. Cl. 260—656 R 6 Claims

An improved catalyst system for selectively preparing monohalogenated olefins, e.g. vinyl chloride, wherein a mixture containing an olefin, hydrogen halide and source of oxygen is reacted with a catalyst system containing a palladium halide, e.g., palladium chloride; a ferric halide, e.g. ferric chloride and an alkali metal halide wherein the alkali metal is selected from the group consisting of sodium and potassium, e.g. sodium chloride. The reaction is conducted at a temperature in the range of between 350° and 650°. The halide moiety of the catalysts employed are identical and correspond to the halogenated hydrocarbon produced. Monohalogenated olefins such as vinyl chloride are important and valuable commercial products, particularly as precursors for polymeric materials.

3,670,038

CHEMICAL PROCESS

Lawrence H. Shepherd, Jr., Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 802,267, Feb. 25, 1969, now Patent No. 3,597,487, dated Aug. 8, 1971. This application Nov. 9, 1970, Ser. No. 88,170

Int. Cl. C07j *3/02*

U.S. Cl. 260—665 R 10 Claims

Dialkylmagnesium compounds undergo a smooth, uncatalyzed chain growth reaction with ethylene or other normally gaseous monoolefins provided the reaction is conducted in a single phase liquid reaction system. Aromatic hydrocarbons or weakly basic ethers are employed as the solvents. The dialkylmagnesium reactants used are those which are completely dissolved in the solvent under the chain growth conditions being used. The process often involves less undesirable side reactions than a comparable chain growth reaction involving an organoaluminum compound.

3,670,039

FRACTIONATION OF C_{12} BICYCLIC AROMATIC HYDROCARBONS BY TETRAHALOPHTHALIC ANHYDRIDE COMPLEX FORMATION

Ronald I. Davis, Wilmington, Del., assignor to Sun Oil Company, Philadelphia, Pa.

Filed May 1, 1970, Ser. No. 33,949

Int. Cl. C07c *7/00*

U.S. Cl. 260—674 N 6 Claims

Mixtures of C_{12} bicyclic aromatic hydrocarbons containing dimethylnaphthalenes are difficult to fractionate by conventional techniques such as distillation or crystallization. However, by dissolving a tetrahalophthalic anhydride in such a mixture at an elevated temperature, followed by subsequent cooling, a solid complex of certain hydrocarbons and the anhydride is formed. Separation of the solid complex from the cooled mixture and its subsequent decomposition results in a product that is substantially richer in those dimethylnaphthalenes which are preferentially complexed. Upon further processing, these dimethylnaphthalenes have utility in the production of dyes.

3,670,040

FRACTIONATION OF C_{13} BICYCLIC AROMATIC HYDROCARBONS DI OR TRIANHYDRIDE COMPLEX FORMATION

Ronald I. Davis, Wilmington, Del., assignor to Sun Oil Company, Philadelphia, Pa.

Filed May 1, 1970, Ser. No. 33,950

Int. Cl. C07c *7/00*

U.S. Cl. 260—674 N 8 Claims

Mixtures of C_{13} bicyclic aromatic hydrocarbons containing trimethylnaphthalenes are difficult to fractionate by conventional techniques such as distillation or crystallization. However, by contacting such mixtures with the dianhydride of 1,2,4,5-benzenetetracarboxylic acid, the dianhydride of 1,2,3,4-benezenetetracarboxylic acid or the trianhydride of 1,2,3,4,5,6-benzenehexacarboxylic acid, a solid complex of certain hydrocarbons and the polyanhydride is formed. Separation of the solid complex and its subsequent decomposition results in a complexate that is substantially richer in those trimethylnaphthalenes which are preferentially complexed. These trimethylnaphthalenes can be demethylated to dimethylnaphthalenes which have utility in the production of dyes.

3,670,041

HYDROGENATION PROCESS

William G. Juhl, Seabrook, and Roland Libers, Dickinson, both of Tex., assignors to Monsanto Company, St. Louis, Mo.

Filed June 10, 1970, Ser. No. 45,216
Int. Cl. C07c 7/00; C10g 31/14
U.S. Cl. 260—674 H 13 Claims

An improved method for the selective hydrogenation of olefinic unsaturated impurities present in an aromatic hydrocarbon feed which comprises contacting the aromatic hydrocarbon feed with a suitable selective hydrogenation catalyst and hydrogen under hydrogenation conditions until the activity of the catalyst is diminished, subsequently rejuvenating the catalyst with hydrogen and a hydrocarbon liquid at elevated temperatures and thereafter contacting the regenerated catalyst with additional quantities of the aromatic hydrocarbon feed.

3,670,042

MODIFIED OXIDATIVE DEHYDROGENATION CATALYSTS

Louis J. Croce, Seabrook, Tex.; Laimonis Bajars, Princeton, and Maigonis Gabliks, Highland Park, both of N.J., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

Continuation-in-part of application Ser. No. 459,878, May 28, 1965. This application Sept. 16, 1969, Ser. No. 858,543
Int. Cl. C07c 5/18
U.S. Cl. 260—680 E 23 Claims

Oxidative dehydrogenation of organic compounds with catalyst comprising a metal ferrite with a Periodic Table Group IIIB metal or metal compound as a catalyst modifier. For example, butene is oxidatively dehydrogenated to butadiene-1,3 with a catalyst comprising manganese ferrite modified with a minor amount of cerium oxide.

3,670,043

OLEFIN CONVERSION PROCESS USING COMPLEXES OF TI, ZR AND HF WITH ORGANOALUMINUM AS OLEFIN REACTION CATALYSTS

Donald H. Kubicek, and Ernest A. Zuech, both of c/o Phillips Petroleum Co., Bartlesville, Okla.

Original application Mar. 28, 1968, Ser. No. 717,027, now abandoned, which is a continuation-in-part of application Ser. No. 635,657, May 3, 1967, now abandoned. Divided and this application Mar. 23, 1970, Ser. No. 22,096
Int. Cl. C07c 3/62
U.S. Cl. 260—683 D 12 Claims

Olefins are converted into other olefins having different numbers of carbon atoms by contact with a homogenous catalyst active for disproportionating an olefin into other olefins of both higher and lower carbon atoms comprising a coordination complex of zirconium, titanium or hafnium together with an aluminum-containing catalytic adjuvant.

3,670,044

CATALYTIC DEHYDROGENATION PROCESS

Lewis E. Drehman, and Darrell W. Walker, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed July 18, 1969, Ser. No. 843,239
Int. Cl. B01j 11/12; C07c 5/18
U.S. Cl. 260—683.3 11 Claims

Cycloalkanes, arylalkanes, and alkanes, such as n-butane, when diluted with steam are dehydrogenated in the presence of gaseous hydrogen or mixtures of gaseous hydrogen and gaseous oxygen to less saturated compounds with a catalyst composition comprising a Group VIII metal or a mixture of a Group VIII metal and a Group IVa metal deposited on a support, such as a Group II aluminate spinel.

3,670,045

ABA BLOCK POLYMERS OF POLYLACTONES AND POLYETHERS

Joseph Victor Koleske; Rene Marie-Joseph Roberts, and Frank Paul Del Gladice, all of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 30, 1970, Ser. No. 102,923
Int. Cl. C08g 45/00; C08d 9/02
U.S. Cl. 260—830 R 7 Claims

The invention relates to novel, solid, substantially water-insoluble ABA block polymers in which the A blocks comprise recurring linear lactone units and the B block comprises recurring oxyethylene units. The block polymers have utility as plasticizers for polyvinyl chloride resins, as surfactants, and as dye assists for polypropylene fiber.

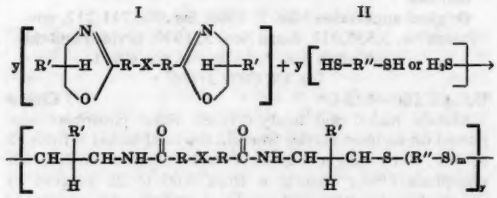
3,670,046

COPOLYMERS OF BIS-OXAZOLINES AND DITHIOL COMPOUNDS AS CURING AGENTS FOR POLYEPOXIDES

Donald A. Tomalia, and Bruce P. Thill, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 16, 1969, Ser. No. 833,759
Int. Cl. C08g 45/12, 45/00
U.S. Cl. 260—830 S 13 Claims

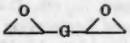
I II



wherein R = alkylene, arylene or arylalkylene
R′ = hydrogen or lower alkyl
R″ = alkylene, arylene, arylalkylene, cycloalkylene, or substituted cycloalkylene groups
X = —O— or —S—
m = 0 or 1
y = molar quantity of monomers and degree of polymerization of polymers.

Also with excess of either I or II the polymer

or —SH end groups which react with



to yield epoxy resin copolymers, when G is the moiety bridging between oxirane groups in a polyepoxide adapted to be cured to obtain an epoxy resin: and processes for making the above. The resins are adapted to be employed as adhesives, and as thermoplastic to thermoset polymers for production of plastic articles of manufacture.

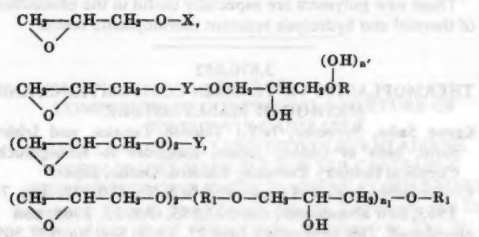
3,670,047
EPOXY RESINS ETHERIFIED WITH ETHYLENICALLY UNSATURATED ALCOHOLS AND COPOLYMERIZED WITH CARBOXY CONTAINING MONOMERS

Bernhard Broecker, Hamburg, Germany, assignor to Reichhold-Albert-Chemie Aktiengesellschaft, Hamburg, Germany

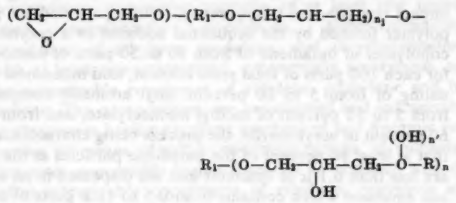
Filed Oct. 1, 1969, Ser. No. 862,939
Claims priority, application Switzerland, Oct. 8, 1968, 15278/68
Int. Cl. C08g 45/04
U.S. Cl. 260—837 R 11 Claims

Water-dilutable vinyl modified polyether resins produced by etherifying an epoxide compound with an unsaturated monohydric alcohol containing at least one ethylenic double bond, copolymerizing the etherified product through its centers of unsaturation with an ehtylenically unsaturated carboxylic compound and neutralizing the copolymer wherein:

a. the epoxide compound is selected from the group consisting of



and



wherein X is an alkyl, acrylic or cycloalkyl group,

Y is an alkylene, arylene or cycloalkylene group,

n' is 0 or a small integer,

n_1 is 0 or a small integer,

R_1 is an aliphatic or aromatic group, and

R is an aliphatic or aromatic group.

b. the unsaturated monohydric alcohol has three to 20 carbon atoms and the etherification is carried out by heating,

c. the carboxylic compound is an α,β-ethylenically unsaturated monocarboxylic or polycarboxylic acid, an anhydride and/or a half ester with monoalcohols having one to four carbon atoms, optionally containing vinyl or vinylidene compounds, and the copolymerization reaction is carried out with heating so that the reaction products have an acid number of at least 25, and

d. the neutralization is carried out in the presence of ammonia, strong organic nitrogen bases or mixtures thereof so that the reaction products are dispersible in or dilutable with water.

3,670,048
GRAFT COPOLYMERS OF UNSATURATED POLYETHERS ON POLYAMIDE AND POLYESTER SUBSTRATES

Eugene Edward Magat, and David Tanner, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of application Ser. No. 863,047, Dec. 30, 1959, now abandoned, Continuation-in-part of application Ser. No. 499,754, Apr. 6, 1955, now abandoned, and 503,790, Apr. 25, 1955, now abandoned, which is a division of application Ser. No. 735,288, May 14, 1958, now Patent No. 3,188,228.
This application Sept. 9, 1966, Ser. No. 578,414
Int. Cl. C08g 41/04
U.S. Cl. 260—857 G 12 Claims

Dye receptive polymers may be prepared by grafting polyethers containing ethylenic unsaturation onto a fiber forming polyamide backbone. The graft copolymer is prepared by passing a polymer whose surface is coated with the vinyl monomer through a zone of irradiation.

3,670,049
BOWLING LANE FINISH CONTAINING A POLYURETHANE AND A POLYOLEFIN

Alex H. Stein, Waukegan, Ill., and William D. Coder, Jr., Akron, Ohio, assignors to The Dexter Corporation, Windsor Locks, Conn. and Brunswick Corporation, Chicago, Ill.

Continuation-in-part of application Ser. No. 642,332, May 31, 1967, now abandoned. This application May 15, 1970, Ser. No. 37,876
Int. Cl. C08g 41/04
U.S. Cl. 260—859 R 7 Claims

A moisture curable polyurethane coating composition, suitable for finishing bowling lanes, contains from about 0.2 to about 10 percent by weight, based on the weight of the polyurethane prepolymer, of a finely divided slip agent such as polyethylene.

3,670,050
METHOD FOR PRODUCTION OF MODIFIED OXYMETHYLENE POLYMERS

Claire J. Castner, Nutley, N.J.; Robert V. Russo, Brooklyn, N.Y., and Raymond A. Berard, Westfield, N.J., assignors to Celanese Corporation, New York, N.Y.

Filed June 16, 1970, Ser. No. 46,820
Int. Cl. C08g 1/24, 39/10
U.S. Cl. 260—860 12 Claims

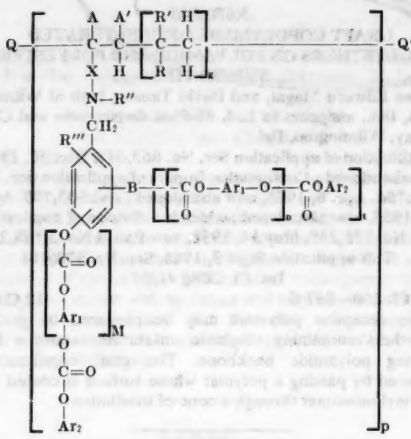
Disclosed herein is method for production of modified oxymethylene polymers by a coupling reaction of an oxymethylene polymer and a dissimilar organic polymer with an isocyanate or an isothiocyanate. The method comprises the consecutive steps of (1) forming an admixture of an organic tin catalyst and the reactive components; and then (2) adding an organic phosphite to enhance the reaction rate. When this sequence is followed a synergistic reaction rate is observed.

3,670,051
CARBONATE CONTAINING COPOLYMERISATION PRODUCTS AND PROCESS FOR THEIR PRODUCTION

Ferdinand Senge, Krefeld; Kurt Weirauch, and Ludwig Bottenbruch, both of Krefeld-Bockum, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

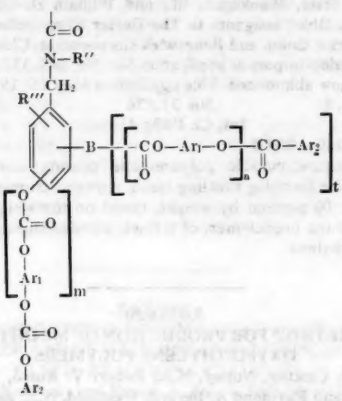
Filed Jan. 28, 1970, Ser. No. 6,648
Claims priority, application Germany, Jan. 31, 1969, P 19 04 651.6
Int. Cl. C07c 69/00; C08g 39/10
U.S. Cl. 260—873 10 Claims

New polymeric products are provided which correspond to the statistical formula



in which A is hydrogen or the methyl group,

A′ is hydrogen or the radical



R is a hydrogen; halogen; a lower alkyl group having up to six carbon atoms; a phenyl group; a vinyl group;

an ester group

of a monohydric alcohol containing the hydrocarbon radical Y of those alcohols which contain up to about 18 carbon atoms including methanol, ethanol, propanol, isopropanol, butanol, isobutanol, hexanol, octanol, lauryl alcohol, stearyl alcohol and the like;

an ester group

of a monocarboxylic acid containing the hydrocarbon radical Z of acids including acetic, propionic, butyric, benzoic and the like acids;

the amide group

the nitrile group —C ≡ N

or an alkyl ether group, preferably those containing up to octoxy eight carbon atoms including methoxy, ethoxy, allyloxy, hexoxy, ocotxy and the like;

R′ is hydrogen, halogen, methyl or nitrile,

R″ is hydrogen or a lower alkyl group having up to about six carbon atoms,

R‴ is hydrogen, a lower alkyl group having up to about six carbon atoms, halogen, an hydroxy group or a phenolic radical which is bound directly or via a methylene group, an oxygen or sulphur atom, a sulphonyl or sulphoxide group, or a silane group,

X is the >C=O or the >SO₂ group;

B is oxygen or an optionally nucleus-substituted phenoxy radical which may be linked to the benzene ring either directly or via a carbon, oxygen, sulphur or silicon atom, with the proviso that when *t* is 0, B is hydrogen,

Ar_1 is a bivalent, optionally nucleus-substituted aromatic radical which may contain a free hydroxy group,

Ar_2 is a monovalent, optionally nucleus-substituted aromatic radical,

Q and Q′ are the endgroups of the copolymerizates as they are formed by the copolymerization reaction initiated by ionic catalysts or free radicals,

g is an integer between about 9 and about 1,000,

m is an integer from about 5 to about 200,

n is an integer from 0 to about 200,

t is 0 or 1 and

p is an integer from 1 to about 15.

These new polymers are especially useful in the production of thermal and hydrolysis resistant thermoplastic resins.

3,670,052

THERMOPLASTIC VINYL RESIN COMPOSITIONS, AND METHOD OF MANUFACTURE

Kazuo Saito, Syracuse, N.Y.; Takeshi Tanaka, and Ichiro Saito, both of Osaka, Japan, assignors to Kanegafuchi Chemical Industry Company Limited, Osaka, Japan

Continuation-in-part of application Ser. No. 470,235, Aug. 7, 1965, now abandoned , and 502,545, Oct. 22, 1965, now abandoned. This application June 27, 1969, Ser. No. 837,309

Claims priority, application Japan, Jan. 25, 1965, 40/3925; 40/3927

Int. Cl. C08f *19/08, 41/12*

U.S. Cl. 260—876 R **10 Claims**

Production of synthetic vinyl resins having pronounced resistance to color deterioration, while also manifesting high impact strength and transparency, utilizing a butadiene graft polymer formed by the sequential addition to a polymer or copolymer of butadiene of from 80 to 30 parts of monomers for each 100 parts of total resin content, said monomers consisting of from 5 to 80 percent vinyl aromatic compound, from 5 to 50 percent of methyl methacrylate, and from 5 to 60 percent of acrylonitrile, the process being characterized in that at least 80 percent of the butadiene particles at the start are less than 0.1 μ in diameter and are dispersed in an aqueous emulsion which contains from 0.5 to 10.0 parts of a formaldehyde sulfoxylic salt, and catalytically effective amounts up to three parts of peroxide, for each 100 parts of resinous constituents used, said particle size being maintained at least until polymerization of the monomeric material has been effectively begun, said butadiene graft polymer being independently useful but also being capable of blending with a resin of the vinyl chloride type to produce a final resin of greatly enhanced properties.

3,670,053

PRODUCTION OF MODIFIED POLYPROPYLENES

Mutsuo Sennari, and Toshihiro Nakajima, both of Yokkaichi-shi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo-to, Japan

Filed Dec. 3, 1969, Ser. No. 881,911

Claims priority, application Japan, Dec. 10, 1968, 43/89931

Int. Cl. C08f *15/04*

U.S. Cl. 260—878 B **2 Claims**

Heteroblock copolymers of propylene and ethylene containing an isotactic polypropylene segment and two copolymer segments in which the quantities of the three segments are specific, and in which the ethylene (polymerized) contents in the copolymer segments are specific, which

heteroblock copolymers are produced by three successive steps of polymerization with the monomer feeds in specific mole ratios of C_2/C_3, the ratio being zero (zero C_2 quantity) for the first step.

3,670,054

BLOCK COPOLYMERS HAVING REDUCED SOLVENT SENSITIVITY

Harold E. De La Mare, El Cerrito, Calif., and Alfred W. Shaw, Stanford, Conn., assignors to Shell Oil Company, New York, N.Y.

Filed Oct. 29, 1969, Ser. No. 872,387
Int. Cl. C08f *15/04, 27/24*
U.S. Cl. 260—880 B 4 Claims

Block copolymers are provided which exhibit reduced sensitivity to organic solvents which comprise block copolymers of at least one elastomeric conjugated diene polymer block, block copolymerized with at least two monovinyl arene polymer blocks, all chains also containing either polyethylene or butadiene blocks, this latter block at least being hydrogenated to an extent sufficient to reduce the original double bonds by at least about 80 percent.

3,670,055

COMPOSITIONS COMPRISING A MIXTURE OF SULFUR-VULCANIZABLE ETHYLENE/PROPYLENE/DICYCLOPENTADIENE COPOLYMERS WITH SULFUR VULCANIZABLE ETHYLENE/PROPYLENE/BUTADIENE COPOLYMERS

Nazzareno Cameli; Paolo Longi; Alberto Valvassori, and Umberto Flisi, all of Milan, Italy, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Apr. 1, 1970, Ser. No. 24,865
Claims priority, application Italy, Apr. 2, 1969, 14983 A/69
Int. Cl. C08f *29/12;* C08d *9/08*
U.S. Cl. 260—889 5 Claims

There are disclosed new unsaturated sulfur-vulcanizable compositions comprising mixtures of at least one unsaturated, substantially amorphous, sulfur-vulcanizable copolymer of ethylene, propylene, and dicyclopentadiene with at least one unsaturated, substantially amorphous, sulfur-vulcanizable copolymer of ethylene, propylene and butadiene. The compositions are unsaturated and vulcanizable to elastomers having excellent mechanical and dynamic properties by means of sulfur-containing recipes, at vulcanization rates appreciably higher than can be obtained with the sulfur-vulcanizable copolymers of ethylene, propylene and dicyclopentadiene alone.

3,670,056

POLYVINYL ALCOHOL FIBER REINFORCED POST-CHLORINATED POLYVINYL CHLORIDE RESINS

Charles A. Heiberger, Princeton, and Henry O. Mottern, Far Hills, both of N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 28, 1970, Ser. No. 102,205
Int. Cl. C08f *29/22, 29/24*
U.S. Cl. 260—897 C 7 Claims

Post-chlorinated vinyl chloride resins including homopolymers of vinyl chloride and copolymers thereof with an olefin such as propylene, having high impact strength together with an adequate melt flow rate are prepared by incorporating polyvinyl alcohol fibers into the resin. The polyvinyl alcohol fibers are completely hydrolyzed, about one-eighth to one-half inch in length, about 1 to 10 denier and have a degree of polymerization in the range of 500 to 3,000.

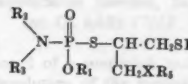
3,670,057

S(ALKLLTHIO ETHYL) PHOSPHOROTHIOAMIDATE

Hiroshi Tsuchiya, Ashiya-shi; Kunio Mukai, Nishinomiya-shi; Akio Kimura, Ikeda-shi; Suminori Kawano, Minoo-shi; Keimei Fujimoto, Kobe; Toshiaki Ozaki, Toyonaka-shi; Sigeo Yamamoto, Toyonaka-shi; Yositosi Okuno, Toyonaka-shi; Katsutoshi Tanaka, Takarazuka-shi; Tadashi Ooishi, and Hisami Takeda, both of Minoo-shi, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

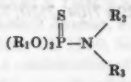
Filed Nov. 10, 1969, Ser. No. 875,565
Int. Cl. C07f *9/24;* A01n *9/36*
U.S. Cl. 260—948 9 Claims

A phosphorothioamidate having the formula,

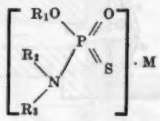


wherein R_1 is an alkyl having up to four carbon atoms, R_2 and R_3 are individually a hydrogen atom, an alkyl having up to 10 carbon atoms, a cycloalkyl having up to 6 carbon atoms, a phenyl, an aralkyl having up to eight carbon atoms or an alkenyl having up to five carbon atoms, R_4 and R_5 are each alkyl having up to five carbon atoms, and X is an oxygen or sulfur atom, which may be effectively used as an insecticidal, acaricidal and fungicidal composition.

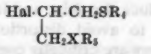
The phosphorothioamidate is prepared by (1) dealkylating a thionophosphoric acid amidate having the formula,



wherein R_1, R_2 and R_3 are as defined above, with an alkali hydrosulfide, to prepare a phosphate having the formula,



(2) condensing the thus obtained phosphate with a halogen compound having the formula,



wherein Hal represents a halogen atom, and R_4, R_5 and X are as defined above.

3,670,058

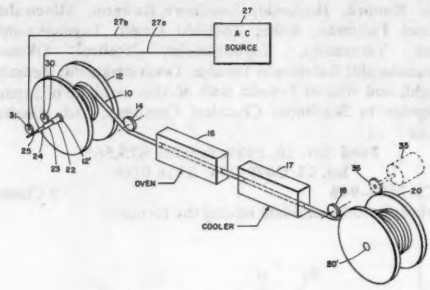
METHOD OF REDUCING SELF-GENERATED ELECTRICAL NOISE IN COAXIAL CABLE

Charles F. Burney, Milpitas, Calif., assignor to GTE Sylvania Incorporated

Filed Feb. 1, 1971, Ser. No. 111,292
Int. Cl. B29c *25/00;* H01b *11/06, 7/18*
U.S. Cl. 264—22 4 Claims

A method of reducing or minimizing internally generated electrical noise in coaxial cable consisting of the steps of

heating the cable sufficiently to heat-soften the dielectric filler, applying an alternating voltage across the inner and



outer conductors of the cable, cooling the cable while maintaining the ac bias across it, and thereafter removing the ac bias.

3,670,059

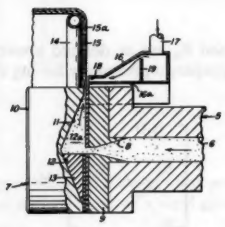
METHOD OF PRODUCING A SKIN-COVERED FOAMED THERMOPLASTIC

Thomas W. Winstead, 2 Overlook Lane, Baltimore, Md.

Continuation-in-part of application Ser. No. 736,871, Apr. 2, 1968, now abandoned , which is a division of application Ser. No. 506,805, Nov. 8, 1965, now Patent No. 3,461,496, dated Aug. 19, 1969. This application Dec. 24, 1969, Ser. No. 887,982

Int. Cl. B29d *7/04, 7/20, 7/24, 27/00*

U.S. Cl. 264—48 **4 Claims**



Method of producing foamed thermoplastic material having a low-density core and at least one integral, high-density, thin skin, the material being suitable for the production of three-dimensionally formed articles on a continuous basis. A narrow strip of the thermoplastic material is extruded at a high linear rate from an arcuate mouth die, immediately surface-chilled to produce the skin, and laterally expanded over a curved mandrel to avoid distortions such as wrinkling. Operating parameters are critically controlled.

3,670,060

A METHOD FOR MANUFACTURING ARTIFICIAL MARBLE

Antonino Cuffaro; Francesco Castronovo; Achille Bruno, all of Palermo, and Gianluigi Rancati, Carini, all of Italy, assignors to Medil, S.p.A., Carini, Italy

Filed Dec. 9, 1969, Ser. No. 883,620

Claims priority, application Italy, Dec. 10, 1968, 41851 A/68

Int. Cl. B28b *7/36;* **B29c** *1/04, 9/00*

U.S. Cl. 264—77 **7 Claims**

Artificial variegated marble is produced from natural stone in particulate form, i.e. in the form of powder or granules, by a method which comprises providing individual batches of color components consisting of the particulate natural stone, powdered thermosetting resin, powdered catalyst for the resin, and a pigment, mixing together the individual batched of color components in a container to form a heterogeneous mixture wherein said individual batches still have retained their separate identities, transferring the heterogeneous mixture to another container to effect at least one re-stratification, and subjecting the mixture to a moulding treatment under increasing temperature and pressure until the resin hardens.

3,670,061

INTRODUCING NITROGEN GAS INTO THE MELT TO IMPROVE FUSED CAST REFRACTORIES

Junn Nakayama, and Yukio Fukatsu, both of Tokyo, Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan

Continuation of application Ser. No. 767,507, Oct. 14, 1968, now abandoned. This application Oct. 29, 1970, Ser. No. 85,267

Claims priority, application Japan, Nov. 7, 1967, 42/71134

Int. Cl. C04b *35/62*

U.S. Cl. 264—82 **1 Claim**

In the production of a dense fused refractory, a dry gas is introduced into/onto a charge of refractory raw materials in a melting furnace. In particular, dry nitrogen gas is introduced through the bores of hollow electrodes used in an electric arc furnace. The resulting melt is poured into a mould where it is solidified or, alternatively, is allowed to cool in the furnace where it is solidified.

3,670,062

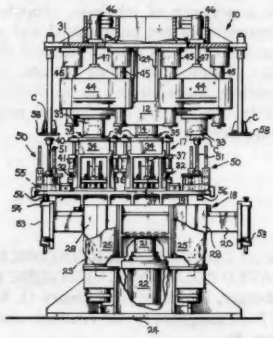
METHOD FOR FORMING PLASTIC ARTICLES

Casimir W. Nowicki, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Original application July 26, 1967, Ser. No. 656,116, now Patent No. 3,590,426. Divided and this application Mar. 23, 1970, Ser. No. 24,927

Int. Cl. B29d *23/03*

U.S. Cl. 264—97 **5 Claims**



Method therefor is provided for injection molding, at one station, a substantially flat, disc-shaped parison while simultaneously blow molding, at a second station, a cup-shaped container from a previously formed parison. The apparatus for performing such method has common clamping means for closing the injection mold and the blow molds with the clamping means arranged to provide maximum clamping force at the injection mold and only minimal forces at the blow molds.

3,670,063

PROCESS FOR THE PRODUCTION OF SHEETS HARDENABLE TO FORM MOLDED ARTICLES

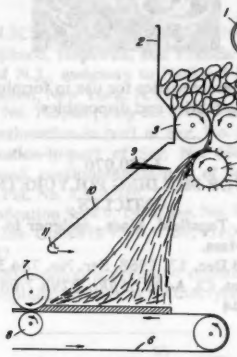
George Berthold Edward Schueler, Tideswell, England, assignor to Redland Bricks Limited, Reigate, Surrey, England

Continuation-in-part of application Ser. No. 561,549, June 29, 1966, now abandoned. This application Sept. 8, 1969, Ser. No. 856,008

Claims priority, application Great Britain, July 12, 1965, 29,471/65; Apr. 12, 1966, 15,160/66

Int. Cl. B01j 2/22

U.S. Cl. 264—115 4 Claims



A mouldable sheet material is formed of a substantially homogeneous mixture of finely divided inorganic material such as mineral waste dust in a proportion of at least 50 percent by weight, a hardenable resin, such as a polyester, epoxy or acrylic resin, in a proportion of not more than 30 percent by weight, and additionally a fibrous material such as glass fibers, asbestos fibers, orsisal fibers. The mixture has a dough-like consistency and is torn to a fluffy mass which is deposited on a conveyor. The fluffy mass is compacted into a sheet in which substantially all the fibers lie in the plane of the sheet but in random directions. The fluffing disperses the fibers to the extent that they can be pressed into the plane of the sheet during the compaction step.

3,670,064

FORMING PRECISE REINFORCED RECESSES IN THERMOPLASTIC FOAMS

Clarence K. Edwards, 865 Morrison Street, and Lawrence D. Edwards, 2816 Rosemont Avenue, both of Medford, Oreg.

Filed Nov. 4, 1969, Ser. No. 873,953

Int. Cl. B29d 27/00

U.S. Cl. 264—130 4 Claims

The invention relates to a novel method for making improved packaging components of thermoplastic foam. Recesses of predetermined size, shape and depth are pressed into sheets of the foam material by the combined effect of a die or hob structure maintained at a temperature which will not melt, but will substantially soften the material, such structure being forced into the material by a pressure which would be inadequate to effect penetration if the material were not progressively softened as the die advances. Each work piece is pre-coated on the face to be recessed with an appropriate release agent. The lateral walls of the recess are protected against heat shrinkage by limitation of temperature and by speed of penetration together with limitation of lateral die area. The material displaced by recess formation is all usefully employed through fusion and condensation to reinforce the wills of the components in the very areas where they are thinned and where the merchandise is to be nested in them.

3,670,065

PROCESS FOR PRODUCING DOSAGE UNITS OF A TYPE RESEMBLING TABLETS

Karl Gunnar Eriksson, Idunavgen 5, Lidingo, and Arnold Mangen, Rosenborgsgatan 27, Karlstad, both of Sweden

Continuation-in-part of application Ser. No. 677,653, Oct. 20, 1967, now abandoned. This application June 13, 1969, Ser. No. 833,184

Claims priority, application Sweden, June 19, 1968, 8362

Int. Cl. A61k 27/12

U.S. Cl. 264—131 7 Claims

Granules composed of a medicine and at least one substance delaying dissolution of the medicine in the gastrointestinal tract are incorporated in a melt of a carrier substance, said dissolution-delaying substance(s) having a higher melting temperature than the carrier substance and remaining all the time unmolten in the melt, said melt with its unmolten granules then being formed into dosage units by mere casting in casting moulds. Medicine particles without dissolution-delaying substance may additionally be incorporated in the melt and/or in a surface layer on the dosage units.

3,670,066

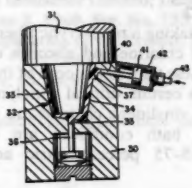
METHOD OF COMPRESSION MOLDING A THERMOPLASTIC ARTICLE WITH WALLS OF VARIABLE THICKNESS

Emery I. Valyi, 52 Sycamore Avenue, Riverdale, N.Y.

Original application June 12, 1969, Ser. No. 834,233, now abandoned , which is a continuation of application Ser. No. 618,862, Feb. 27, 1967, now abandoned. Divided and this application Nov. 10, 1969, Ser. No. 875,303

Int. Cl. B29c 3/00, 17/14; B29f 1/00

U.S. Cl. 264—148 1 Claim



A method for molding articles having variable thickness walls from thermoplastic material. An amount of plastic slightly in excess of that required to fill a mold cavity is severed from an extruded quantity and introduced into the cavity. The mold is closed to build up pressure and force the material throughout the cavity. The excess material causes a pressure build up above the necessary molding pressure and causes a plunger in an overflow well to retract under the excess pressure so as to cause the overflow well to receive the excess material. Pressure can be maintained on material in the well during cooling to maintain the cavity filled when shrinkage occurs. Where adjacent thick and thin wall portions are formed in the article, the thick wall forming portion of the cavity may contain another well which receives excess material at a pressure slightly lower than the overflow well and this excess material may then be forced back into the cavity under pressure to insure filling thereof.

3,670,067

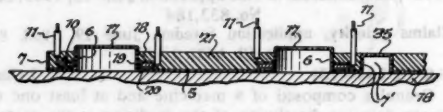
METHOD OF MAKING ILLUMINATED PANEL

Richard W. Coolbaugh, East Aurora, and Floyd W. Engels, Colden, both of N.Y., assignors to A-T-O Inc., Cleveland, Ohio

Original application Jan. 2, 1968, Ser. No. 694,967, now Patent No. 3,545,110. Divided and this application Feb. 13, 1970, Ser. No. 11,124

Int. Cl. B28b *1/48;* B29c *6/00*

U.S. Cl. 264—154 4 Claims



An electroluminescent panel having a shell formed of light-transmitting material and having an indicia bearing face to be illuminated. An electroluminescent member is positioned adjacent the ace within the shell which is filled with potting compound to a level encapsulating the member. The shell can be formed with an open-ended wall extending inwardly from the indicia bearing face to provide a socket for a control member.

3,670,068

PROCESS OF SPINNING A NOVEL MODACRYLIC FIBER

Wilford Donald Jones, Jenkintown, Pa.; James Peter Baldino, Westmont, N.J., and Sidney Melamed, Elkins Park, Pa., assignors to Rohm & Haas Company, Philadelphia, Pa.

Original application Oct. 17, 1966, Ser. No. 586,929, now Patent No. 3,516,903. Divided and this application Mar. 4, 1969, Ser. No. 833,214

Int. Cl. D01f *7/00, 3/10*

U.S. Cl. 264—182 10 Claims

A method of making a modacrylic fiber, said fiber having a skin wherein the chlorine and nitrogen content are each at least 20 percent less than in the core of the fiber. The skin effect occurs when certain critical copolymer compositions of acrylonitrile and vinylidene chloride are used and when particular spinning bath conditions are employed, namely, spinning into 65–75 percent nitric acid at from about 75°–100Φυ C.

3,670,069

PROCESS FOR FORMING HYDROXYETHYL CELLULOSE FIBERS HAVING HIGH WATER ABSORPTION AND HIGH WATER RETENTION PROPERTIES

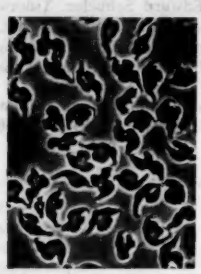
Reid L. Mitchell, Morristown; Thomas E. Muller, Springfield; Hugh D. Stevens, Long Valley, and Robert S. Tabke, Parsippany, all of N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sept. 15, 1969, Ser. No. 858,573

Int. Cl. D01f *3/00*

U.S. Cl. 264—187 1 Claim

Fibrous cellulosic products are prepared by extruding cellulose solutions through fiber forming devices. These fiber forming devices comprise porous extrusion media containing a controlled number and distribution of discrete flow paths. These flow paths constitute at least about 10 percent of the total extrusion surface area. The cellulosic fibers prepared by these processes exhibit unique and highly desirable physical



and structural characteristics for use in forming new and improved nonwoven fabrics and disposables.

3,670,070

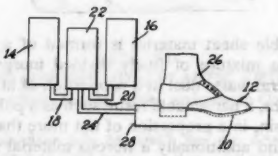
PROCESSES FOR MOLDING POLYURETHANE FOAM ARTICLES

Daniel Appleton, Topsfield, Mass., assignor to USM Corporation, Boston, Mass.

Filed Dec. 17, 1968, Ser. No. 784,361

Int. Cl. A43d *65/00;* B29h *7/08*

U.S. Cl. 264—244 6 Claims



Process for molding polyurethane foam articles, particularly for molding polyurethane foam outsoles onto shoe uppers in which relative speeds of development of foam and viscosity in the mixture are controlled through a coaction of mixed catalysts in the reactive mixture.

3,670,071

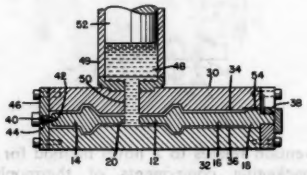
METHOD OF MANUFACTURE OF A COATED VALVING MEMBER

David L. Walchle, and Peter J. Schmidt, both of Cincinnati, Ohio, assignors to Xomox Corporation, Cincinnati, Ohio

Filed July 16, 1970, Ser. No. 55,370

Int. Cl. B29b *3/00;* F16k *1/22*

U.S. Cl. 264—273 13 Claims



All areas of the butterfly-type valving member which may be exposed to attack by corrosive substances, are coated with a protective material of the class of tetrafluoroethylene or equivalent substance, by a high-pressure and high-temperature molding process; the process involving withdrawing support from a journal end of the valve member during a critical phase of the molding procedure to ensure adequate coating of said journal end including the customary turning center hole thereof.

3,670,072

HEMATOLOGICAL STAIN SYSTEM

Thomas Mauthner, Livonia, Mich., assignor to Cambridge Chemical Products, Inc., Detroit, Mich.

Continuation-in-part of application Ser. No. 517,139, Dec. 28, 1965, now abandoned. This application Jan. 15, 1969, Ser. No. 791,500

Int. Cl. G01n *1/00, 1/30, 33/16*

U.S. Cl. 424—3 3 Claims

A hematological stain system comprising a solution of Wright's stain, a modified buffer and a thiocarbamyl fixative glycerine and a lower alkanol.

3,670,073

HYDROPHILIC POLYMER CONTAINING AEROSOL

Thomas H. Shepherd, Hopewell, and Francis E. Gould, Princeton, both of N.J., assignors to National Patent Development Corporation, New York, N.Y.

Division of Ser. No. 743,626, July 10, 1968, Pat. No. 3,574,822, which is a continuation-in-part of Ser. No. 654,044, July 5, 1967, continuation-in-part of Ser. No. 650,259, June 30, 1967, abandoned, continuation-in-part of Ser. No. 567,856, July 26, 1966, Pat. No. 3,520,949.

This application Sept. 9, 1970, Ser. No. 70,890

Int. Cl. A61k *7/00, 7/02, 7/10*

U.S. Cl. 424—47 9 Claims

An aerosol composition is prepared containing a hydroxyl containing hydrophilic acrylate or methacrylate.

3,670,074

SUNSCREEN FORMULATION CONTAINING TRIETHANOLAMINE NEUTRALIZED 2-HYDROXY-4-METHOXY-BENZOPHENONE-5-SULFONIC ACID

Abraham J. Doner, deceased, late of North Miami Beach, Fla. (by Cyril Doner, executor), assignor to Miles Laboratories, Inc., Elkhart, Ind.

Continuation-in-part of application Ser. No. 698,679, Dec. 18, 1967, now abandoned. This application Jan. 22, 1971, Ser. No. 108,961

Int. Cl. A61l *23/00*

U.S. Cl. 424—60 7 Claims

An active sunscreen ingredient comprised of 2-hydroxy-4-methoxy-benzophenone-5-sulfonic acid, neutralized with triethanolamine, and formulated with various compatible vehicles to produce effective sunscreens for human use.

3,670,075

PROCESS OF PREPARING A PROTEASE INHIBITOR

Viktor Mansfeld, and Zdenek Padr, both of Prague, Czechoslovakia, assignors to Spofa, United Pharmaceutical Works, Prague, Czechoslovakia

Filed May 13, 1970, Ser. No. 37,007

Claims priority, application Czechoslovakia, May 19, 1969, 3534/69

Int. Cl. A61k *17/00*

U.S. Cl. 424—110 3 Claims

Process for preparing a protease inhibitor from animal pancreas, for instance hog and cattle pancreas, following extraction of insulin therefrom with a dilute mineral acid, such as phosphoric acid, comprising the steps of:

1. extracting moist cut-up pancreas material with 60 to 70 percent aqueous ethanol having a pH of 10–13,

2. removing the ethanol from the extract by evaporation under decreased pressure and at a temperature not exceeding 40° C.,

3. cooling the remaining concentrated extract whereby lipoids present therein are separated out and removing the separated lipoids,

4. introducing a water-soluble inorganic salt and preferably ammonium or magnesium sulfate, whereby a precipitate comprising an protein complex is separated out and recovering the precipitate,

5. forming a suspension of the precipitate from step 4 in water having a pH of 5.5 to 7.5 and heating the suspension to a temperature of 50° to 80° C, introducing trichloracetic or sulfosalicylic acid into the suspension in a concentration of 2 to 3 weight percent, cooling the resulting mixture to a temperature of 15° to 20° C., whereby the protein is separated out as a precipitate and separating off said albumin precipitate,

6. adjusting the pH of the filtrate to a pH of 7.0 to 7.5, saturating the filtrate with sodium chloride in an amount of 25 to 30 g/100 ml filtrate and acidifying the saturated filtrate with hydrochloric acid to provide a pH of 1.0 to 3.0 whereby the inhibitor is separated out as a precipitate,

7. subjecting the precipitate from step 6 to successive washings with a buffered sodium chloride solution whose pH is successively increased from 1.7 to 9.0 and separately recovering the fractions from each washing, combining the fractions recovered in the pH range of 3.0 to 6.0, subjecting the combined fractions to deionization and recovering the pure inhibitor.

3,670,076

DENTAL PROPHYLAXIS COMPOSITION COMPRISING ALUMINA OF PARTICULAR PARTICLE SIZE

Joseph C. Muhler, Indianapolis, Ind., assignor to Indiana University Foundation, Bloomington, Ind.

Filed Mar. 31, 1970, Ser. No. 24,354

Int. Cl. A61k *7/16*

U.S. Cl. 424—157 6 Claims

A mixture of relatively large and relatively small alpha alumina particles (comprising between about 2.5 percent and 10 percent small particle size alumina and balance large particle size alumina) provides a superior abrasive component for a dental prophylaxis paste adapted for infrequent application to the teeth.

3,670,077

FUNGICIDAL AND INSECTICIDAL METHODS AND COMPOSITIONS EMPLOYING PYRIMIDINE DERIVATIVES

Peter Frank Hilary Freeman; Margaret Claire Shephard, and Brian Kenneth Snell, all of Bracknell, England, assignors to Imperial Chemical Industries Limited, London, England

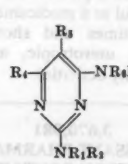
Filed June 3, 1968, Ser. No. 733,770

Claims priority, application Great Britain, June 14, 1967, 27,482/67

Int. Cl. A01n *9/36, 9/22*

U.S. Cl. 424—200 6 Claims

Fungicidal and insecticidal pyrimidine derivatives of the formula



and salts thereof. The R_1 – R_7 substituents may all be hydrogen or various organic radicals.

3,670,078

CONTROL OF HOOKWORM LARVAE EMPLOYING A MIXTURE OF CERTAIN PHOSPHATE ESTERS

William R. Coleman, and Thomas E. Duffey, both of Miami, Fla., assignors to Pet Chemicals, Inc., Miami Springs, Fla.

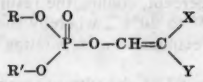
Filed Feb. 24, 1970, Ser. No. 13,798

Int. Cl. A01n *9/36*

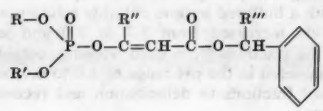
U.S. Cl. 424—212 5 Claims

Effective control of hookworm larvae in kennels, dog runs, yards, and like areas habited by hookworm susceptible

domestic animals is provided by contacting the area with a composition comprising an aqueous medium containing pesticidal amounts of a first compound having the formula:



and a second compound having the formula:



where in the formulae, R and R′ are lower alkyl having one to five carbon atoms, R″ and R‴ are hydrogen or lower alkyl having one to five carbon atoms, X is halogen, preferably chlorine, and Y is hydrogen or halogen, preferably chlorine.

3,670,079

ANABOLIC AGENTS

Dolores J. Patanelli, Rahway, and Glen E. Arth, Cranford, both of N.J., assignors to Merck & Co., Inc., Rahway, N.Y.

Filed Oct. 6, 1970, Ser. No. 78,636
Int. Cl. A61k *27/00*
U.S. Cl. 424—241 **3 Claims**

The present invention relates to the use of certain steroid compounds as anabolic agents.

3,670,080

PROCESS FOR STABILIZATION OF A COMPOSITION OF 2α,3α-EPITHIO-ANDROSTANES AND COMPOSITION OBTAINED THEREBY

Masaharu Hirata, Suita, Japan, assignor to Shionogi & Co., Ltd., Osaka, Japan

Filed Mar. 2, 1970, Ser. No. 15,826
Claims priority, application Japan, Mar. 6, 1969, 44/17118
Int. Cl. C07c *173/00*
U.S. Cl. 424—241 **46 Claims**

A very stable composition of 2α,3α-epithio-androstanes comprising 2α,3α-epithio-androstane, basic substance and/or surface active agent, and a process for preparation thereof. The composition is useful as a medicament, because it can be stored for extended times and shows strong anabolic, myogenic, androgenic, uterotropic, antiestrogenic, antiuterotropic and antifertility activities.

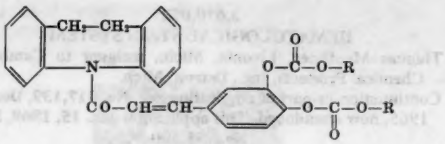
3,670,081

ANTI-DEPRESSANT PHARMACEUTICAL COMPOSITION CONTAINING N-[3,4DI(ALKOXYCARBONYL)CINNAMYL] IMINODIBENZYL AS THE ACTIVE INGREDIENT

Jean Cahn, Paris, France, and Mar-Pho, Societe d'Etude et d'Exploitation de Marques, Paris, France

Original application Mar. 21, 1967, Ser. No. 624,729, now Patent No. 3,523,944. Divided and this application Oct. 13, 1969, Ser. No. 870,738
Claims priority, application Great Britain, Mar. 25, 1966, 13,362/66
Int. Cl. A61k *27/00*
U.S. Cl. 424—244 **5 Claims**

Anti-depressant pharmaceutical composition containing N-[3,4-di(alkoxycarbonyl)cinnamyl]iminodibenzyl of the formula:



wherein R is a lower alkyl group, or a non-toxic acid addition salt thereof as the active ingredient.

3,670,082

METHOD OF CONTROLLING RICE BLAST AND SHEATH BLIGHT DISEASE WITH 3,4-DICHLORO-6-HYDROXYIMINOMETHYLPYRIDAZINE-1-OXIDE

Yoshihachi Watanabe, Koga-gun, and Masaru Ogata, Kobe, both of Japan, assignors to Shionogi & Co., Ltd., Asaka, Japan

Continuation-in-part of application Ser. No. 743,950, July 11, 1968, now abandoned. This application Oct. 21, 1970, Ser. No. 82,812
Claims priority, application Japan, July 11, 1967, 42/44825
Int. Cl. A01n *9/22*
U.S. Cl. 424—250 **2 Claims**

A method of preventing and controlling a rice blast disease and sheath blight disease which comprises applying thereto as an active ingredient 3,4-dichloro-6-hydroxyiminomethylpyridazine 1-oxide.

3,670,083

GERMINE-DIACETATE IN THE TREATMENT OF MYASTHENIA GRAVIS

Edward M. Cohen, Norristown, Pa.; Edward J. J. Grabowski, Westfield, N.J., and Rezso Aczel, Chalfont, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 6, 1970, Ser. No. 9,439
Int. Cl. A61k *27/00*
U.S. Cl. 424—256 **2 Claims**

Germine-3,15-diacetate is prepared by transesterification of germine-3,16-diacetate. This novel compound has been found to be useful in the treatment of myasthenia.

3,670,084

METHOD OF TREATING PSORIASIS WITH CYCLOHEXIMIDE

Leopoldo F. Montes, 4319 Kennesan Drive, Birmingham, Ala.

Filed June 20, 1969, Ser. No. 835,230
Int. Cl. A61k *21/00*, *27/00*
U.S. Cl. 424—268 **6 Claims**

Cycloheximide composition for use in treating psoriasis. Cycloheximide dispersed in a pharmaceutically acceptable topical carrier and topically applied to psoriasis affected area of skin.

3,670,085

INJECTABLE THERAPEUTIC TETRAMISOLE FORMULATIONS

David Ernest Pryor, Balwyn, Victoria, and Bruce Adam Forsyth, Croydon, Victoria, both of Australia, assignors to Imperial Chemical Industries of Australia and New Zealand Limited, Melbourne, Victoria, Australia

Filed July 13, 1970, Ser. No. 54,641
Claims priority, application Australia, July 12, 1969, 58312/69
Int. Cl. A61k *27/00*
U.S. Cl. 424—270 **2 Claims**

Aqueous injectable solutions of tetramisole comprising tetramisole acetate or hydrochloride equivalent to at least 6 percent w/v of L-tetramisole base and from 0.1 to 0.5 inclusive mole per liter of solution of a sodium salt of citric, tartaric or phosphoric acid, the pH of the solution being adjusted to the range of from 2 to 4 by addition of tartaric, citric or phosphoric acid.

3,670,086

INJECTABLE TETRAMISOLE COMPOSITIONS

David Ernest Pryor, Balwyn, Victoria, and Bruce Adam Forsyth, Croydon, Victoria, both of Australia, assignors to Imperial Chemical Industries of Australia and New Zealand Limited, Melbourne, Victoria, Australia

Filed July 13, 1970, Ser. No. 54,642
Claims priority, application Australia, July 21, 1969, 58311/69
Int. Cl. A61k 27/00
U.S. Cl. 424—270 8 Claims

Aqueous injectable solutions of tetramisole which comprise tetramisole citrate, tartrate, or phosphate equivalent to at least 6 percent w/v of L-tetramisole base, the pH of the solution being adjusted to the range of from 2 to 4 by addition of tartaric, citric or phosphoric acid.

3,670,087

METHOD OF LOWERING INTRAOCULAR PRESSURE

Olfeo John Lorenzetti, Forth Worth, Tex., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Oct. 16, 1970, Ser. No. 81,430
Int. Cl. A61k 27/00
U.S. Cl. 424—273 7 Claims

Oxymetazoline and xylometazoline preferably in the form of an aqueous solution of their hydrochlorides are effective in lowering intraocular pressure when applied topically to the eye and are therefore useful in the treatment of glaucoma.

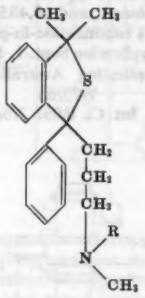
3,670,088

METHOD OF TREATING HYPERCHLORHYDRIA AND/OR ASSOCIATED CONDITIONS

Wilbur Lippmann, Montreal, Quebec, Canada, assignor to Ayerst, McKenna and Harrison, Limited, St. Laurent, Quebec, Canada

Continuation-in-part of application Ser. No. 826,657, May 21, 1969. This application Oct. 14, 1969, Ser. No. 866,396
Int. Cl. A61k 27/00
U.S. Cl. 424—275 5 Claims

A method for preventing the secretion of excessive amounts of hydrochloric acid in the stomach of humans suffering from hyperchlorhydria and/or associated conditions, by administering an effective amount of a compound of the formula



wherein R is hydrogen or methyl.

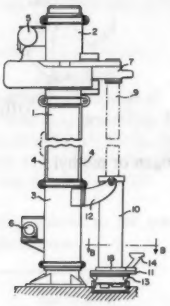
ELECTRICAL

3,670,089

APPARATUS FOR ELECTROSLAG REMELTING OF METALS WITH MOLTEN SLAG INTRODUCTION

Boris Evgenievich Paton; Jury Vadimovich Latash; Boris Izrailevich Medovar; July Georgievich Emelianenko, all of Kiev, and Mikhail Markovich Kljuev, Elektrosal, all of U.S.S.R., assignors to Institut Elektrosvarki Im. E. O. Patona, Kiev, U.S.S.R.

Continuation-in-part of application Ser. No. 592,054, Nov. 4, 1966, now abandoned , and 61,014, July 9, 1970, now abandoned , which is a division of application Ser. No. 592,054, , Continuation of application Ser. No. 10,419, Feb. 11, 1970, now abandoned , and 10,485, Feb. 11, 1970, now abandoned , which is a continuation-in-part of application Ser. No. 592,054,. This application Sept. 1, 1970, Ser. No. 68,637
Claims priority, application Australia, Oct. 25, 1966, A 9973/66
Int. Cl. H05b *3/60*
U.S. Cl. 13—9 54 Claims



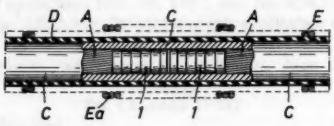
An electroslag plant or apparatus in which molten slag can be introduced through the lower portion of a crucible device, either through its sidewall or bottom plate, into the bottom of the remelting zone, which occurs in an electroslag remelting process, in an amount sufficient to achieve a predetermined depth in the remelting zone. The plant can can use single or plural consumable electrodes and in some embodiments has a bottom plate weld lug to enhance efficient current flow. The achievement of the predetermined depth is signalled when current flows as a result of the bottom introduced slag contacting and closing a circuit through an energized electrode pre-positioned in the remelting zone.

3,670,090

ARRANGEMENT IN EXPLOSION JOINING OF HIGH TENSION LINES AND THE LIKE

Tor Osteng, 2831 Raufoss, Norway

Filed Dec. 2, 1970, Ser. No. 94,344
Claims priority, application Norway, Dec. 6, 1969, 4828/69
Int. Cl. H02g *15/08*
U.S. Cl. 174—90 3 Claims



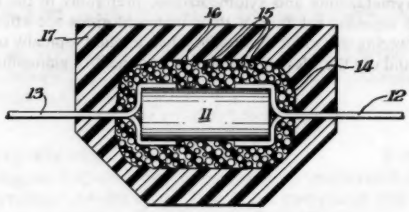
The present invention relates to detonation joining of high tension lines and the like in which the line ends and their steel cores respectively are joined together by a single shot or detonation. According to the invention each of the line ends to be joined is provided with an exposed core end on which is firmly wedged a separate steel sleeve having an outer diameter approximately equal to that of the line, a main connecting tube of aluminium enclosing the adjacent steel sleeves and parts of the line ends is provided with an exterior layer of explosive charge which during detonation compresses said main connecting tube around the line ends and simultaneously around the steel sleeves which thereby are compressed around the core ends so that an effective mutual anchorage of the components of the joint is obtained.

3,670,091

ENCAPSULATED ELECTRICAL COMPONENTS WITH PROTECTIVE PRE-COAT CONTAINING COLLAPSIBLE MICROSPHERES

Franklin D. Frantz, Woodford, Vt.; Salvatore J. Acello, Sharon Springs, N.Y., and Harold I. Geller, Nashua, N.H., assignors to Sqrague Electric Company, North Adams, Mass.

Filed May 20, 1971, Ser. No. 145,365
Int. Cl. H05k *5/06*
U.S. Cl. 174—52 PE 6 Claims



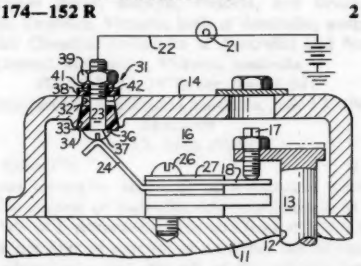
A compressible medium is dispersed throughout a somewhat flexible matrix, so as to provide a pre-coat for encapsulated electrical components that reduces the stresses occurring thereon. The stresses relieved could be produced either from the component or from the outer encapsulant. The design of the system is such that the low pressures exerted during the application of the final coating do not substantially collapse or render useless the effective stress reducing characteristics of the intermediate pre-coat.

3,670,092

HERMETICALLY SEALED ELECTRICAL FITTING

Kenneth W. Updyke, Peoria, and William J. Grebner, Metamora, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 4, 1970, Ser. No. 69,704
Int. Cl. H01b *17/26*
U.S. Cl. 174—152 R 2 Claims



A hermetically sealed, insulated fitting for providing electrical continuity across a wall of an internally pressurized

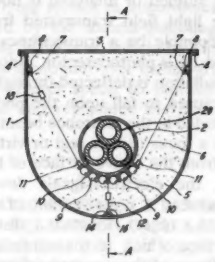
housing, an opening in the wall tapering outwardly toward the housing interior, a threaded flanged electrical element penetrating the opening with a flexible insulating member arranged about the element and being formed with a taper generally mating with the tapered opening the tapered surface being formed with a plurality of stepped ridges, the flanged electrical element being effective to urge the tapered insulating member into sealing engagement with the tapered hole and the element itself.

3,670,093

ELECTRIC CRYOCONNECTION

Daniel Goumy, Seyssinet, France, assignor to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes and Georges Claude and Compagnie Generale D'Electricite, Paris, France

Filed June 28, 1971, Ser. No. 157,357
Claims priority, application France, June 30, 1970, 7024202
Int. Cl. H01b 7/34
U.S. Cl. 174—15 C 9 Claims



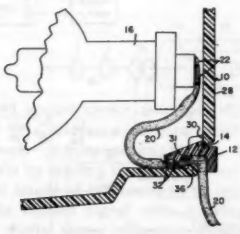
An electric cryoconnection operating under very cold conditions comprising an inner elongated cold chamber enclosing a plurality of electric leads, said cold chamber being housed inside a hot chamber with the interposition of heat insulating material and resting on a cradle constituted by transverse cables. Over each cable there are fitted balls lying in contacting relationship with the cold chamber and separated by washers. Said balls and washers are held in position on the cables by stops while the cables are held fast by guys.

3,670,094

STRAIN RELIEF WIRE HOLDER

William R. Mattson, Gloucester, Mass., assignor to Sylvania Electric Products, Inc.

Filed Oct. 26, 1970, Ser. No. 83,698
Int. Cl. H01r 13/58
U.S. Cl. 174—65 R 2 Claims



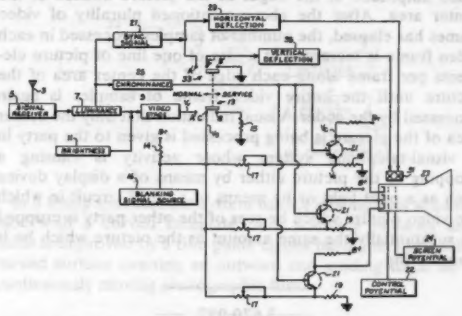
A strain relief element for electrical supply wires for use with small electrical appliance fixtures. The strain relief element is in the shape of a wedge which is inserted from the outside of the fixture through a wire-way opening. When the wedge is in place, it compresses the supply wires to the inner fixture wall and permanently locks itself to the fixture body.

3,670,095

CATHODE RAY TUBE "SET-UP" CIRCUITRY

Rangaswamy Arumugham, Oakfield, and Robert Charles Wheeler, Elba, both of N.Y., assignors to Sylvania Electric Products, Inc.

Filed Oct. 30, 1970, Ser. No. 85,462
Int. Cl. H04n 9/20
U.S. Cl. 178—5.4 R 7 Claims



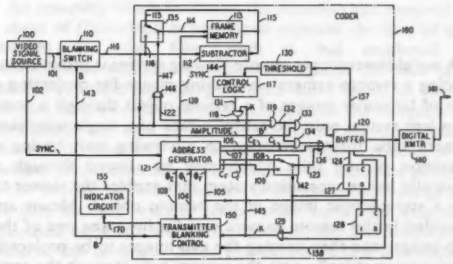
Control circuit apparatus for effecting "set-up" of a color cathode ray tube in a color television receiver includes a first switching means for selectively coupling and decoupling a magnitude alterable video signal source and a plurality of parallel connected "null" circuit arms each having an alterable impedance which, in turn, is coupled to circuitry having an electron device coupled to an impedance with the electron device coupled to a potential source, a chrominance signal source, and a cathode electrode of the cathode ray tube and the impedance coupled to a potential reference level. The circuitry is "bridge-like" in operation inhibiting current flow through the "null" circuits at "black level" setting of the video signal source and at a "service" position or decoupling of the video signal source.

3,670,096

REDUNDANCY REDUCTION VIDEO ENCODING WITH CROPPING OF PICTURE EDGES

James Charles Candy, Convent Station; Gladys Marie Franke, Matawan, and Frank William Mounts, Colts Neck, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 15, 1970, Ser. No. 46,292
Int. Cl. H04n 7/12
U.S. Cl. 178—6 17 Claims



In a conditional replenishment video system a coder selects only those samples from an input video signal which represent a significant change in amplitude for their corresponding spatial points within the video frame. A buffer memory in the coder stores the selected samples prior to

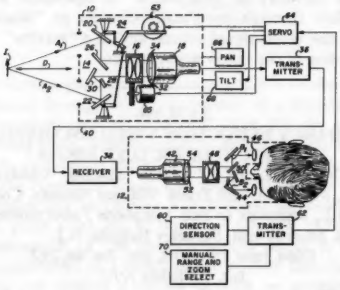
their being transmitted to a receiving location. In response to an overload signal from the buffer memory, all selection by the coder is stopped for an interval at least as long as one video frame, and a special code word is coupled into the buffer memory. In a plurality of video frames following the cessation of all selecting, only those samples from the center area of the video frame are processed by the coder for transmission to a receiving location. Upon receiving the special code word, the receiver apparatus establishes a constant video amplitude at the edges of the picture outside of the center area. After the above-mentioned plurality of video frames has elapsed, the number of samples processed in each video frame is increased at a rate of one line of picture elements per frame along each edge of the center area of the picture until the entire video frame of samples is again processed by the coder. Visual indication that only the center area of the picture is being processed is given to the party in a visual-telephone system whose activity is causing a cropping of the picture either by means of a display device such as a pilot light or by means of a novel circuit in which the video picture which he sees of the other party is cropped by substantially the same amount as the picture which he is transmitting.

3,670,097

STEREOSCOPIC TELEVISION SYSTEM AND APPARATUS

James L. Jones, San Jose, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Oct. 20, 1969, Ser. No. 867,842
Int. Cl. H04n 7/00
U.S. Cl. 178—6.5 **17 Claims**



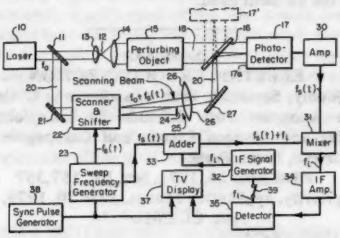
A novel stereoscopic remote viewing system is provided including a remote camera unit having means for projecting a pair of binocular images of a remote object through a common lens system onto the sensitive face of a single television camera tube for transmission to a viewing unit having a television picture tube which may be viewed through a binocular image separation system that enables the viewer to see a stereoscopic image of the remote object. Means are provided in the remote camera unit for inverting one of the two images and then causing the two images to be projected mirror symmetrically onto the camera tube through the common lens system. Because of this image symmetry, distortion produced by the lens system or camera tube similarly affects both images. Means are provided in the image separation system of the viewing unit for transposing the transmitted inverted image and producing binocular separation of the images.

3,670,098

OPTICAL SCANNING APPARATUS

Adrianus Korpel, Prospect Hgts., Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Mar. 9, 1970, Ser. No. 17,545
Int. Cl. H04n 1/00
U.S. Cl. 178—6 **11 Claims**



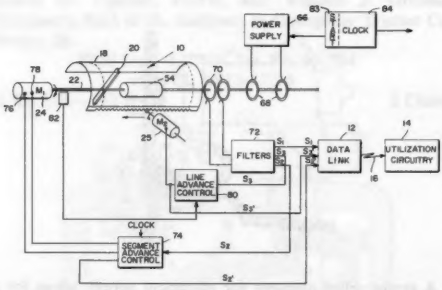
An object to be studied or analyzed is flooded with light from a laser. The light field transmitted from the object, which might for example be a transparency or a vibrating surface, is received by a photodetector. Another portion of the laser light or radiation is deflected throughout a scanning pattern and also caused to fall upon the photodetector. An optical system included in the reference beam path brings the reference beam to a focus (either real or virtual image) at a selected distance from the active surface of the photodetector. As a result, the electric signals developed by the photodetector represent a cross-section of the light field, transmitted from the object, located a distance from the photodetector surface which is the same as the distance therefrom to the focus of the scanned reference beam. Different cross-sections of the signal field from the object may be displayed merely by modifying the optical system. Depending on the manner in which the electric signals are processed, they may be caused to represent either a direct image or a hologram of the cross-section being visualized. By using the electric signals to drive a television-type monitor, a real-time display is reproduced.

3,670,099

FACSIMILE SYSTEM UTILIZING PRE-SCAN DETECTION OF INDICIA

Donald S. Oliver, Acton, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Mar. 18, 1968, Ser. No. 713,689
Int. Cl. H04n 1/12, 7/12
U.S. Cl. 178—6 **21 Claims**



A facsimile system connected to a transmission line of limited bandwidth has a novel optical scanner which scans data-bearing segments of a document at normal speed and blank segments at a higher speed to conserve the limited

bandwidth of the transmission line. In addition to the usual reading head, the scanner includes a first data-detecting head to scan the document a fixed distance in advance of the reading head and generate signals indicative of the presence or absence of data in scanned segment. These signals are applied to drive mechanism to control the speed of the scanner so that blank segments are "read" more rapidly than data-bearing segments. This results in significant time savings in scanning and allows compression of a greater amount of information into the transmitted signal. A second data-detecting head controls the skipping of blank lines and further improves the performance of the system.

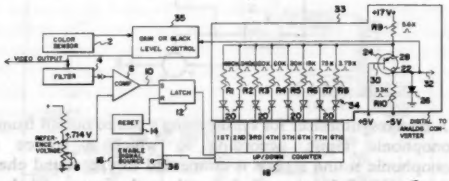
The invention is accordingly drawn to an apparatus for "reading" the contents of a document at different speeds depending on the presence or absence of indicia at various segments of the document and comprises a reading head, driving means for moving the reading head at a controlled speed with respect to the document, an optical indicia-detecting head spaced from the reading head and movable across the document in advance of the reading head to generate control signals indicative of the presence or absence of indicia in advance of the reading head, and means for controlling the speed of the driving means in accordance with the control signals generated by the indicia-detecting head to thereby move the reading head over indicia-bearing segments of the document at one speed and over indicia-free segments of the document at a greater speed to thereby reduce the time required to read and reproduce the contents of the document.

3,670,100

AUTOMATIC REFERENCE LEVEL SET FOR TELEVISION CAMERAS

John A. Briggs, Salt Lake City, and Ronald C. Ward, Taylorsville, both of Utah, assignors to Telemation, Inc., Salt Lake City, Utah

Filed Mar. 29, 1971, Ser. No. 129,061
Int. Cl. H04n *5/16*
U.S. Cl. 178—7.1 **6 Claims**



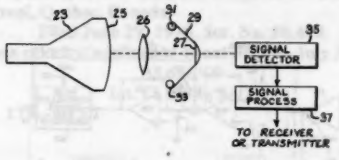
Methods and apparatus for automatically establishing the voltage levels in a television camera which represent signal amplitude levels corresponding to the black and white reference levels by sensing the voltage level of a video signal channel as the image of the scene to be televised is scanned, comparing the sensed signal with a reference signal and establishing a digital signal indicative of whether the voltage of the sensed signal is greater or less than that of the reference, storing the digital information and, if desired, altering the information stored upon command from the comparator, establishing an output voltage signal having a magnitude determined by the stored or altered digital information and modifying the black and white levels from the camera.

3,670,101

FILM SCANNING SYSTEM LINEARITY APPARATUS

John Francis Bulharowski, Rochester, N.Y., assignor to Sylvania Electric Products Inc.

Filed Sept. 14, 1970, Ser. No. 71,761
Int. Cl. H04n *5/84*
U.S. Cl. 178—7.2 **1 Claim**



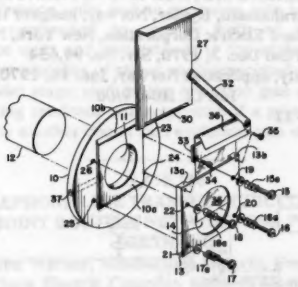
In a flying spot scanner system having a flying spot scanner tube with a curved faceplate, film scanning linearity and focus is improved by a film guide means having an outwardly curved surface exerting an outward and guiding force on a continuously moving photographic film.

3,670,102

FILM INSERTION AND REMOVAL DEVICE FOR USE WITH A CATHODE RAY TUBE

John Marez, San Diego, and Alan R. Hatch, La Jolla, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Mar. 2, 1971, Ser. No. 120,233
Int. Cl. H04n *5/64*; G03b *27/60*
U.S. Cl. 178—7.8 **8 Claims**

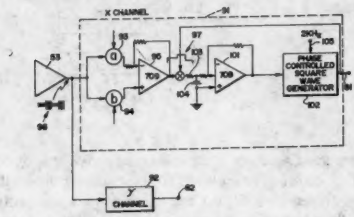


An assembly which facilitates the insertion and removal of a sheet of film which is positioned adjacent the face of the cathode ray tube. Film, such as that employed in photochromic techniques, positioned against the face of a cathode ray tube generating an ultra-violet beam, for example, can be drawn into intimate contact with the faceplate of the cathode ray tube by means of a partial vacuum applied between the film and the faceplate through a conduit in a member of the assembly which receives the faceplate portion of the cathode ray tube. Because of the chemical coatings on the film and the warmer temperature associated with the operation of photochromic equipments, the film frequently sticks to the faceplate. Since photochromic film has limited life, it requires relatively frequent replacement which is accomplished by inserting a sliding member between first and second members, the sliding member having a roller positioned along its bottom edge and parallel embossments along its sides for "peeling" the film from the faceplate of the cathode ray tube without marring or disfiguring the surface of the faceplate.

3,670,103
GRAPHICAL INPUT TABLET

Larry K. Baxter, and Shintaro Asano, both of Boston, Mass., assignors to Shintron Company, Inc., Cambridge, Mass.

Original application Apr. 18, 1968, Ser. No. 722,335, now Patent No. 3,591,718. Divided and this application Apr. 28, 1971, Ser. No. 138,203
Int. Cl. G08c 21/00
U.S. Cl. 178—19 1 Claim

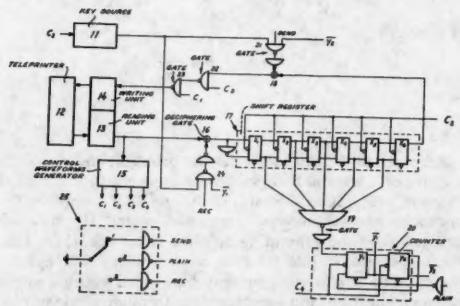


An a-c potential field is established on an electrographic tablet. A stylus that may be used to write upon the tablet comprises a capacitive pickup to provide a potential representative of the stylus position. The potential field is alternately switched at a rapid rate between vertical equipotentials and horizontal equipotentials in synchronism with output analog switches coupled to the stylus to provide an X analog signal output and a Y analog signal output representative of the horizontal and vertical coordinates, respectively, of the stylus tip above the tablet.

3,670,104
CIPHERING METHOD AND APPARATUS

Per Reider Abrahamsen, Kjeller, Norway, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 3, 1970, Ser. No. 94,654
Claims priority, application Norway, Jan. 16, 1970, 151/70
Int. Cl. H04l 9/00
U.S. Cl. 178—22 8 Claims

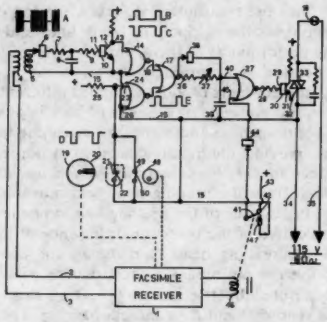


The present invention is related to a method and apparatus to avoid overprinting at the end of teleprinter lines on page-printing teleprinters when a coding signal is used for enciphering of teleprinter messages. This is accomplished by enciphering the first of three procedure characters (two CARRIAGE RETURN and one LINE FEED) in the normal manner while the next two characters are not enciphered. At the receiving end, the first CARRIAGE RETURN is retrieved as normal, and the next two characters are passed in plain text without deciphering.

3,670,105
PHASING SYSTEM FOR FACSIMILE RECORDERS

Deward J. Houck, Mastic Beach, N.Y., assignor to International Scanatron Systems, Wyandanch, N.Y.

Filed Dec. 5, 1969, Ser. No. 882,483
Int. Cl. H04n 1/36
U.S. Cl. 178—69.5 F 2 Claims

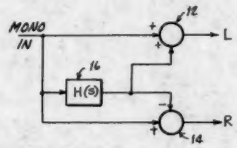


A phasing system for facsimile recorders seeks to match pulses from the received signal with recorder generated pulses. When the recorder is out of phase with the received signals, a controlled width pulse interrupts the power to the recorder motor causing a predetermined slippage until phasing is corrected.

3,670,106
STEREO SYNTHESIZER

Robert A. Orban, East Palo Alto, Calif., assignor to Parasound, Inc., San Francisco, Calif.

Continuation-in-part of application Ser. No. 667,216, Sept. 12, 1967, now abandoned. This application Apr. 6, 1970, Ser. No. 25,775
Int. Cl. H04r 5/00
U.S. Cl. 179—1 G 4 Claims



A stereo synthesizer for synthesizing a stereo output from a monophonic input, according to which a source of monophonic sound signals is connected to two sound channels, the signals being applied directly to the two sound channels and also in delayed fashion thereto by means of a network transfer function so as to reinforce the direct signals in one channel and oppose them in another channel as a function of frequency. The network transfer function is such that the amplitude of the frequency response is independent of frequency while the phase response varies as a function of frequency.

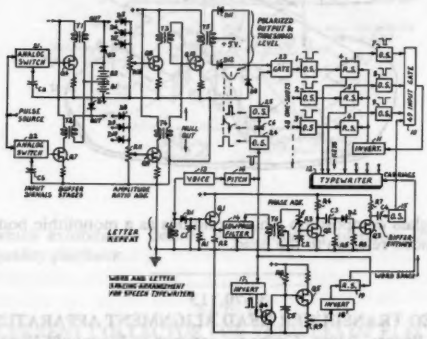
3,670,107
WORD AND LETTER SPACING ARRANGEMENT FOR HUMAN-SPEECH TYPEWRITERS

Meguer V. Kalfaian, 962 Hyperion Avenue, Los Angeles, Calif.

Filed Dec. 14, 1970, Ser. No. 97,892
Int. Cl. G10l 1/16
U.S. Cl. 179—1 SA 4 Claims

In speech recognition phenomena, each phonetic information is contained within major peaks of the sound wave. The

longest time period between these major peaks has a time limit according to the lowest pitched voice, which is considered to be 45 cycles per second. Thus any longer time period that may occur between the major peaks is considered as termination point of a spoken word, and a signal is



produced to operate the carriage of the typewriter. There is also provided means for preventing repetition of printing phonetic symbols during a spoken word. And further, there is provided means for allowing repetition of phonetic symbols to be typed during a spoken word, when so spoken in some languages.

3,670,108

DECENTRALIZED LOCAL TELEPHONE SYSTEM

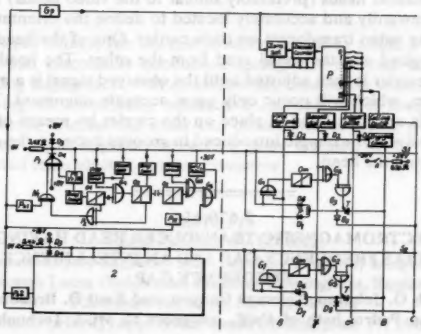
Bjorn Andersen, Oslo, Norway, assignor to Max Manus Landoya, Askes and George Manus, Oslo, Norway

Continuation of application Ser. No. 603,027, Dec. 19, 1966, now abandoned. This application Feb. 25, 1970, Ser. No. 14,759

Claims priority, application Norway, Jan. 6, 1966, 161,141

Int. Cl. H04m *3/00*

U.S. Cl. 179—18 J **4 Claims**



An intercommunication system the stations of which contain at least one electro-acoustic transducer, a duplex amplifier and an electronic connections device which in cooperation with an electronic control circuit common to all stations continuously transmits synchronization pulse trains over one pair of conductors to all stations. Over a second pair of conductors, connection is established between the calling station and the called station, if this called station is not busy. All stations are connected in parallel at the same communication time. For each simultaneous communication desired, an extra pair of conductors (communication line) is parallel-connected to all stations together with one connection device in each station and in the common control circuit. This is made possible by the synchronizing pulse train and the coincidence of these pulses and a calling pulse.

3,670,109

TELEPHONE TRANSLATING APPARATUS

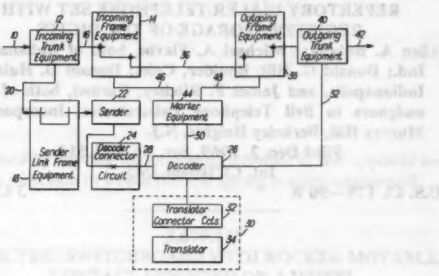
Derek Leyburn, Mississauga, Ontario; Bernard R. Montague, Dollard des Ormeaux, Quebec, and Henry K. Mattila, Roxboro, Quebec, all of Canada, assignors to Bell Canada, Montreal, Quebec, Canada

Filed June 29, 1970, Ser. No. 50,493

Claims priority, application Great Britain, July 3, 1969, 33,656/69

Int. Cl. H04q *3/47*

U.S. Cl. 179—18 ET **9 Claims**



A telephone system translator for translating input codes each made up of a number of code digits into translations each made up of a number of information bits including a decoder to initiate a direct route connection and capable of providing an alternate route when a direct route is not available. The invention also extends to the provision of two translator preference units and an exclusion gate unit capable of selective connection to one or both of the translator preference units and also extends to the exclusion gate unit including a plurality of stages each associated with a respective decoder stage; each of the exclusion gate stages is capable of being rendered non-responsive if a prior call is being handled by another one of said exclusion gate stages.

3,670,110

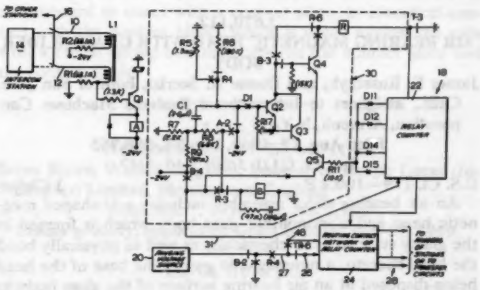
TELEPHONE LINE TRANSFER CIRCUIT USING DISJOINT ROUTING NETWORK FOR PARTIAL DECODING

Wesley John Warner, Mississauga, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Feb. 22, 1971, Ser. No. 117,550

Int. Cl. H04m *3/38*

U.S. Cl. 179—18 AD **11 Claims**



An intercom telephone system having a relay counter which includes a disjoint routing contact network. For single

digit codes, the routing network decodes ringing applied to a first input thereof onto one of 10 outputs depending on the digit dialled. For two digit codes, a transfer circuit connected to one of the 10 outputs is activated by a transfer signal applied to the first input after the first digit, to switch the ringing source to a second input of the routing network. After the second digit is dialled, ringing applied to the second input is partially decoded by the routing network onto one of four of the outputs. The remaining decoding onto one of 10 further outputs for two digit stations is effected by two relays in the transfer circuit slaved to two corresponding relays in the relay counter. Thus, a portion of the routing network is reused on the second digit of two digit calls for partial decoding.

3,670,111

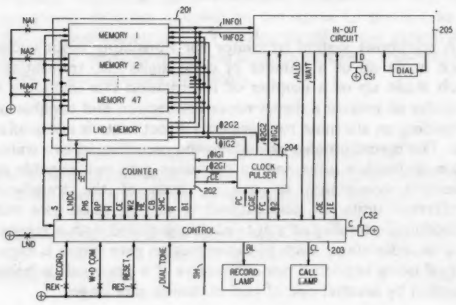
REPERTORY DIALER TELEPHONE SET WITH REGISTER STORAGE OF THE DIGITS

Allen A. Bukosky; Michael A. Flavin, both of Indianapolis, Ind.; Donald G. Hill, Boulder, Colo.; Donald D. Huizinga, Indianapolis, and James F. Ritchey, Carmel, both of Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 2, 1969, Ser. No. 881,515

Int. Cl. H04m *1/45*

U.S. Cl. 179—90 B **3 Claims**



In an electronic type repertory dialer telephone set, direct station selection for recording or automatically dialing out is provided by a name button switch array, each button accessing an associated shift register memory. A clock pulser and counter circuit initiates an automatic call sequence in response to the electronic detection of dial tone after a particular memory has been designated.

3,670,112

AIR BEARING MAGNETIC HEAD WITH GLASS SLIDER BODY

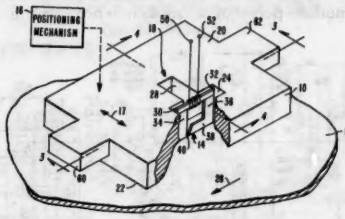
James F. Ruszczyk, and Duane R. Secrist, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 18, 1969, Ser. No. 850,765

Int. Cl. G11b *5/60, 5/10, 5/42*

U.S. Cl. 179—100.2 P **3 Claims**

An air bearing slider assembly includes a U-shaped magnetic head and a monolithic glass body which is formed in the glassy state so as to chemically as well as physically bond the head thereto, a nonmagnetic gap in the base of the head being disposed at an air bearing surface of the glass body to facilitate noncontact magnetic recording. The slider assembly is fabricated using a mold having a central cavity which defines the desired configuration of the glass body and which positions the magnetic head at a selected location relative to the glass body to be formed. The mold cavity is filled with a



fluid glass composition which solidifies as a monolithic body in bonded relation to the head.

3,670,113

VIDEO TRANSDUCER HEAD ALIGNMENT APPARATUS

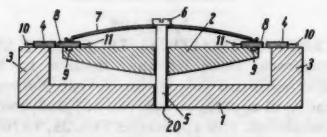
Peter Bragas, Itzum, Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Germany

Filed Oct. 8, 1970, Ser. No. 79,068

Claims priority, application Germany, Oct. 17, 1969, P 19 52 369.4

Int. Cl. G11b *5/42, 5/56*

U.S. Cl. 179—100.2 B **8 Claims**



To align transducer heads on a rotating carrier, so that the gap extends exactly radially and is properly placed on the carrier, a drum-shaped support is provided with magnetic transducer heads (preferably similar to the video heads) facing inwardly and accurately located to define the orientation of the video transducers on their carrier. One of the heads is energized and the signal read from the other. The head on the carrier is then adjusted until the observed signal is a maximum, which will occur only upon accurate alignment. The heads are then fixed in place on the carrier by means of an adhesive, for example introduced in grooves between the carrier and the head.

3,670,114

ELECTROMAGNETIC TRANSDUCER HEAD HAVING A BIAS FREQUENCY GAP AND AN INTELLIGENCE FREQUENCY GAP

Keith O. Johnson, Topanga Canyon, and Kent D. Broadbent, San Pedro, both of Calif., assignors to MCA Technology, Inc.

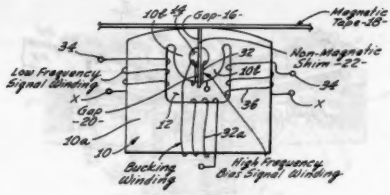
Continuation-in-part of application Ser. No. 786,293, Dec. 23, 1968, now abandoned. This application Nov. 17, 1969, Ser. No. 877,305

Int. Cl. G11b *5/20, 5/24*

U.S. Cl. 179—100.2 C **4 Claims**

An improved electromagnetic transducer head is provided for high quality audio recording and which includes a folded shim mounted in the gaps of its magnetic core to enhance the recording operating characteristics of the head. The particular transducer head to be described includes a magnetic core having a first section of minimum volume, on which a high frequency bias winding is wound for recording purposes, with relatively low power and heating effects; and having a second

section of relatively large volume on which the record/playback intelligence signal windings are wound, and



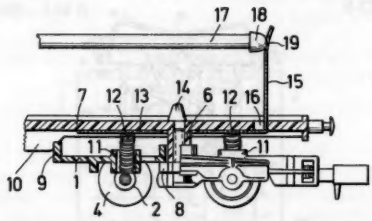
which exhibits the desired low frequency response for high quality playback.

3,670,115

CURRENT COLLECTOR FOR VEHICLES OF ELECTRIC TOY AND MODEL RAILROAD INSTALLATIONS

Robert Munzing, Nurnberg, Germany, assignor to Mas Ernst, Nurnberg, Germany

Filed June 8, 1970, Ser. No. 44,486
Claims priority, application Germany, June 6, 1969, P 19 28 825.6
Int. Cl. B60l *5/00, 9/02, 9/16*
U.S. Cl. 191—45 R **5 Claims**



A rail vehicle for toy and model railroads in which a helical thin electrically conductive spring wire has one end in sliding engagement with an electrically conductive wheel axle having an electrically conductive railroad wheel mounted thereon, whereas the other end of said helical spring wire is in electrical engagement with a plate adapted to be connected to an electric current consumer.

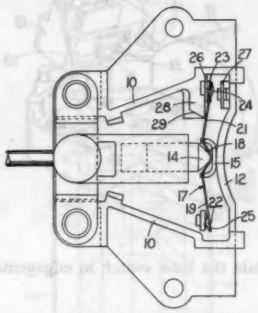
3,670,116

ELECTRICAL SWITCHES

Edward Cryer, Higham, near Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed June 10, 1970, Ser. No. 45,001
Claims priority, application Great Britain, June 17, 1969, 30,534/69
Int. Cl. H01h *13/28*
U.S. Cl. 200—6 BB **1 Claim**

An electrical switch includes a body, a conductive support member carried by the body, a pair of electrically interconnecting conductive leaf springs carried by said support member and extending in opposite directions therefrom and fixed contacts carried by the body and engageable by the leaf spring. An operating member is pivotally mounted on the body and engageable with the leaf spring to move the leaf spring relative to the fixed contacts, and the switch has a first stable position in which a plunger holds one of the leaf springs stressed, a second stable position, reached by moving the operating member in one angular direction, in which the plunger moves out of engagement with the leaf spring so that the leaf spring is unstressed, and a third unstable position



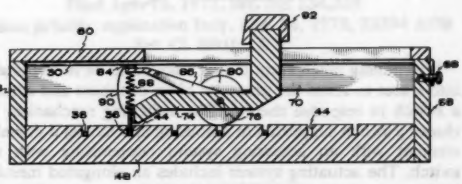
reached by moving the operating member in the opposite angular direction in which the leaf spring is again unstressed.

3,670,117

ELECTRIC SWITCHBOARD WITH ROCKER MOVABLE CONTACT MOUNTED ON A WHEEL

Le Roy D. Yancey, Bountiful City, Utah, assignor to Major Corporation, Chicago, Ill.

Filed Mar. 9, 1967, Ser. No. 621,984
Int. Cl. H01h *15/06*
U.S. Cl. 200—16 C **16 Claims**



A switchboard having a base with parallel grooves and flat lateral strips spacing the grooves, electrical conductive rods positioned in the grooves, and a contact blade secured to one end of a lever mounted on a programming wheel so that the blade contacts a rod in a groove when the programming wheel bottoms on the opposite sides of a groove. Conductive rails, normal to the conductive rods, can be secured to the switchboard to coact with a contact plate, in electrical contact with the contact blade, which is urged against the rails with a coiled spring coacting between the contact plate and the contact blade.

3,670,118

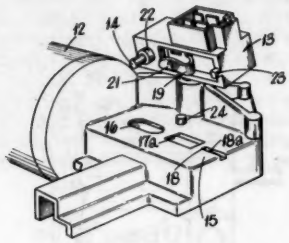
WINDSCREEN WIPER MOTORS

Brian Stowe, Walsall, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Jan. 7, 1970, Ser. No. 1,168
Claims priority, application Great Britain, Jan. 17, 1969, 2,825/69
Int. Cl. H01h *9/08*
U.S. Cl. 200—47 **2 Claims**

A windscreen wiper motor includes a limit switch which is secured to the casing of the motor, co-operating location means provided on the limit switch and the casing for locat-

ing the limit switch in the desired position relative to the casing. The limit switch carries a resilient tongue which engages



the casing to retain the limit switch in engagement with the casing.

3,670,119

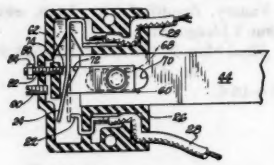
SWITCH WITH IMPROVED ACTUATOR MEANS

Wallace A. Gebhardt, and Prentice R. Corn, both of Logansport, Ind., assignors to Switches Incorporated

Filed Mar. 2, 1971, Ser. No. 120,139

Int. Cl. H01h *35/00*

U.S. Cl. 200—52 R 31 Claims



A switching mechanism that is adapted to be incorporated into a seat to sense the presence of an occupant and actuate a switch in response thereto. The switching mechanism includes a switch supported in a housing and having a movable element with an actuating system cooperating with the switch. The actuating system includes an elongated member having one end connected to the support and a free end spaced from the support. The elongated member extends generally parallel to the upper surface of the seat and is deflected from normal in response to an occupant in the seat. An elongated actuating arm cooperates with the element and the free end of the first elongated member to move the element between the first and second positions in response to deflection of the elongated member thereby actuating the switch. The switching mechanism further includes automatic adjustment means to compensate for manufacturing and age variations of the seat.

3,670,120

HORN ACTUATING MEANS

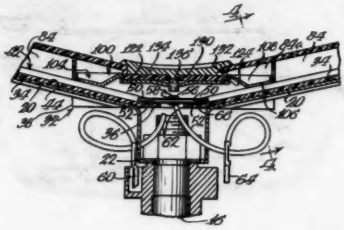
Prentice R. Corn, and Wallace A. Gebhardt, both of Logansport, Ind., assignors to Switches, Inc.

Filed Jan. 11, 1971, Ser. No. 105,357

Int. Cl. H01h *9/00*

U.S. Cl. 200—61.55 14 Claims

A horn actuating mechanism for actuating elongated spaced metal strip switches forming part of the steering wheel of an automobile. The actuating mechanism includes a flexible cover cooperating with a base supporting a pair of switches that extend in opposite directions from a central portion of the steering wheel with the cover having a rigid plate connected at the center thereof. The rigid plate has free ends that overlie the inner ends of the respective switches and the plate has projections extending towards the strips so that a force applied adjacent the center of the cover will actuate at least one of the switches.



In addition, the plate is releasably secured to the cover through an emblem which prevents relative movement between the respective elements.

3,670,121

ELECTRICAL SWITCH

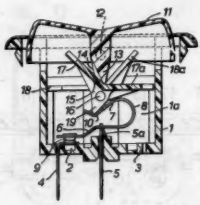
John Arthur Howe, Chilwell, England, assignor to TRW Inc., Cleveland, Ohio

Filed July 9, 1970, Ser. No. 53,362

Claims priority, application Great Britain, July 14, 1969, 35,356/69

Int. Cl. H01h *13/28*

U.S. Cl. 200—67 G 3 Claims



An electrical switch includes a first pivotally mounted actuating member, the rocking movement of which is transmitted to a second pivotally mounted actuating member whose rocking movement effects the operation of a leaf spring over its dead center position to open and close the switch contacts. The said first actuating member has a depending lug which engages with and rides over sloping ramps forming part of the said second actuating member.

3,670,122

WARNING DEVICE FOR DUAL CIRCUIT HYDRAULIC BRAKE SYSTEMS

Juan Belart, Walldorf, and Ulrich Seidel, Wehr, both of Germany, assignors to ITT Industries, Inc.

Filed Dec. 4, 1970, Ser. No. 95,308

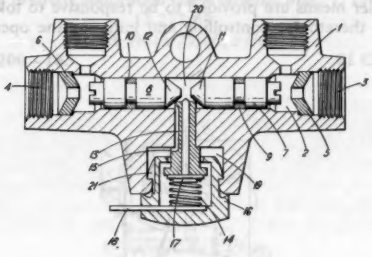
Claims priority, application Germany, Dec. 10, 1969, P 19 61 845.2

Int. Cl. H01h *35/38, 3/42*

U.S. Cl. 200—82 D 5 Claims

A warning device for indicating the failure of one circuit in a two-circuit brake system. Two pistons in a closed cylinder are normally balanced by the pressure from one circuit acting on the outside of one piston and the pressure from the other circuit acts on the outside of the other piston. The inside ends of the pistons are tapered cam surfaces against which a cam follower is spring biased. A contact switch movable with the cam follower is closed when the pistons move to either end of the cylinder due to a pressure failure in one circuit.

A pressure medium groove is provided connecting the space between the two pistons to the chamber in which the switch is located. This latter chamber is vented to the atmosphere. This draws attention to a leaking seal of either or



both pistons of the warning device. A check valve is provided between the space between the two pistons and the atmosphere to allow leaking hydraulic fluid to flow out while preventing foreign matter from entering the brake system.

3,670,123

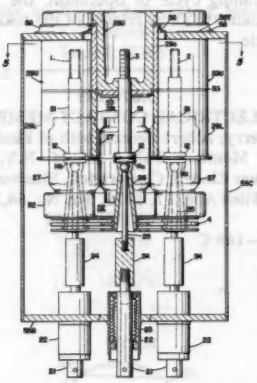
MULTI-POINT TO COMMON POINT DEAD TANK SWITCH HAVING VACUUM INSULATED CONTACTS AND VACUUM INSULATED TERMINALS

Elmer L. Luehring, Cleveland Heights, Ohio, assignor to Joslyn Mfg. and Supply Company, Chicago, Ill.

Filed Apr. 29, 1971, Ser. No. 138,562

Int. Cl. H01h *33/66*

U.S. Cl. 200—144 B **4 Claims**



A vacuum switch has means for selectively opening or closing one or more of plural contact sets each having a stationary contact and a relatively movable contact. Terminals for the stationary contacts are provided within an electrically dead tank which provides the vacuum enclosure for the contacts and also for terminal conductors.

3,670,124

BLAST ORIFICE UNIT FOR SELF-BLASTING COMPRESSES GAS ELECTRIC CIRCUIT-BREAKERS

Benito Jose Calvino y Teijeiro, Bergamo, Italy, assignor to MAGRINI Fabbriche Riunite Magrini-Scarpa e Magnano M.S.M. S.p.A., Milan, Italy

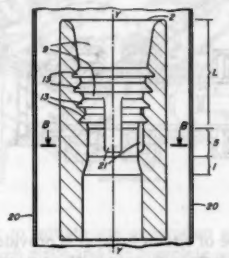
Filed Apr. 15, 1971, Ser. No. 134,268

Claims priority, application Italy, Apr. 16, 1970, 23393

Int. Cl. H01h *33/70*

U.S. Cl. 200—148 R **5 Claims**

An axial blast breaking chamber for self-blasting compressed gas electric circuit breakers wherein the chamber wall is solid and is provided with a plurality of internal longitudinal grooves extending parallel to and symmetrically disposed about the axis of the chamber. When the contacts are closed the fixed contact, which is in close-proximity to the inner wall of the chamber, extends past the grooves



thereby inhibiting flow of quenching gas. Flow of quenching gas remains inhibited until the chamber and attached movable contact are displaced sufficiently to withdraw a portion of the longitudinal grooves below the lower end of the fixed contact.

3,670,125

BLAST NOZZLE FOR SELF-BLASTING COMPRESSED GAS ELECTRIC CIRCUIT-BREAKERS

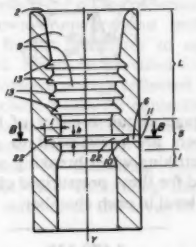
Benito Jose Calvino y Teijeiro, Bergamo, Italy, assignor to MAGRINI Fabbriche Ruinite Magrini - Scarpa e Magnano M.S.M. S.p.A., Milan, Italy

Filed Apr. 15, 1971, Ser. No. 134,269

Claims priority, application Italy, Apr. 16, 1970, 23394 A/70

Int. Cl. H01h *33/70*

U.S. Cl. 200—148 R **6 Claims**



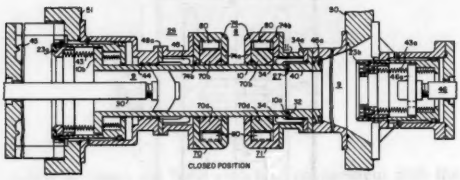
An axial blast breaking chamber for self-blasting compressed gas electric circuit breakers wherein the chamber wall is provided with a plurality of radial holes having an entrance to the inside of said breaker chamber through a ring-like feeding groove coaxial to the longitudinal axis of the chamber. When the contacts are closed the fixed contact, which is in close proximity to the inner wall of the chamber, extends past the feeding groove thereby inhibiting flow of quenching gas. Flow of quenching gas remains inhibited until the chamber and attached movable contact are displaced sufficiently to withdraw the feeding groove and radial holes below the lower end of the fixed contact.

3,670,126

COMPRESSED-GAS CIRCUIT INTERRUPTER HAVING A PAIR OF RAPID TRANSFER INSULATING NOZZLES

Robert M. Roidt, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 1, 1969, Ser. No. 838,157
Int. Cl. H01h *33/54*
U.S. Cl. 200—148 R **5 Claims**



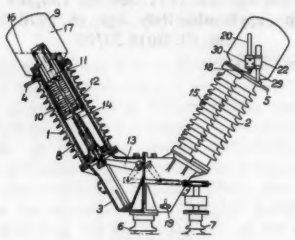
A gas-blast type of circuit breaker is provided having a pair of separable contacts with a pair of contractable insulating nozzles disposed closely adjacent the point of separation of the separable contacts. In one embodiment of the invention, there is provided a pair of tubular separable contacts, through which the gas exhausts, and a pair of spaced contractable insulating nozzles are provided to locate the arc quickly axially and to control the gas-flow conditions.

3,670,127

HIGH VOLTAGE CIRCUIT BREAKER OF LOW LIQUID TYPE

Inge Gard, Ludvika, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Apr. 21, 1971, Ser. No. 135,934
Int. Cl. H01h *33/75*
U.S. Cl. 200—150 B **7 Claims**



In a high voltage circuit breaker of low liquid type the breaking chambers are pressurized to prevent the circuit breaker from restriking when breaking capacitive loads. All the seals required for these pressurized chambers are located below the liquid level in each chamber.

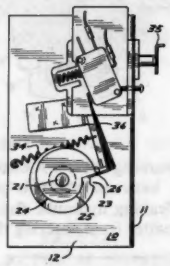
3,670,128

ADJUSTABLE TIMER HAVING ROTATING CAM AND WIDE RANGE VARIABLE DWELL

Malcolm J. Estrem, Edina, Minn., assignor to The Cornelius Company, Anoka, Minn.

Division of Ser. No. 795,389, Jan. 2, 1969, abandoned.
Filed Oct. 13, 1969, Ser. No. 865,904
Int. Cl. H01h *3/42*
U.S. Cl. 200—153 **17 Claims**

Adjustable timing apparatus for actuating individual switch contact assemblies at various predetermined times during the cycle of rotation of a shaft including a plurality of cams characterized by the inclusion of a peripheral involute actuating surface which further includes a switch contact resetting portion. Individual switch contact assemblies are removably disposed in operative position adjacent to a cam whereby a cam follower type of switch contact actuator is biased into adjustable continuous contact with the peripheral surface of each of the cams. Means are provided for effecting rotation of the shaft, upon which the cams are disposed, at a predetermined substantially constant rotational velocity. Further means are provided to be responsive to tokens supplied thereto for controlling and initiating the operation of the timing apparatus. A suitable slot adapted to receive tokens is provided with a removable stop for arresting the motion of a coin and further means are provided for generating a signal in response to the presence of the token. The signal is utilized to initiate operation of the timer. Prior to the end of the timing cycle of operation, the removable stop means is actuated to allow release of the token into a collection receptacle.

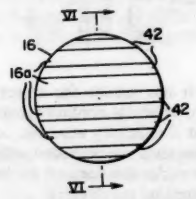


3,670,129

ELECTRICAL CONTACT MEMBERS

Sidney J. Cherry; Albert Bereza, both of Elmira, and Paul O. Wayland, Montour Falls, all of N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 17, 1970, Ser. No. 64,362
Int. Cl. H01h *1/02*
U.S. Cl. 200—166 C **7 Claims**



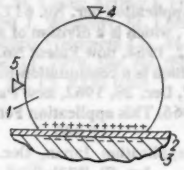
Electrical make and break contact members for use in a vacuum-type circuit interrupter including a casing forming an evacuated chamber with a pair of separable contacts contained therein and composed of copper (or other similar metal), the contacting surface of each contact having a non-continuous coating of a refractory material, covering the major part of the contact surface and whereby during disengagement of the contacts the welding and high erosion rate of copper caused by an electric arc in a vacuum is minimized by the refractory material coating.

3,670,130

IMPROVEMENTS IN ELECTROSTATIC RELAYS

John Christopher Greenwood, Pinner, England, assignor to International Standard Electric Company, New York, N.Y.

Filed Feb. 24, 1970, Ser. No. 13,450
Claims priority, application Great Britain, Mar. 7, 1969, 12,221/69
Int. Cl. H01b 29/00, 57/00
U.S. Cl. 200—183 21 Claims



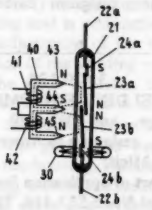
A relay is provided which includes a drop of conducting liquid, for example mercury, and means for subjecting the drop to an electro-static field to effect movement of the drop between at least two positions. This movement causes the conductive drop to interconnect different contacts, switching the relay from one state to another.

3,670,131

ADJUSTING AND CONTROLLING REED RELAYS

Jean-Louis Beaud, Neuchatel, Switzerland, assignor to Hasler A. G., Bern, Switzerland

Filed June 3, 1970, Ser. No. 43,134
Claims priority, application Switzerland, June 6, 1969, 8605/69
Int. Cl. H05b
U.S. Cl. 219—7.5 5 Claims



A process for adjusting and checking reed relays comprises locally heating one of the two switching tongues by a high frequency heating system, and deflecting both switching tongues simultaneously by magnetic force, so that the switching tongue exposed to high frequency heating undergoes a permanent material deformation.

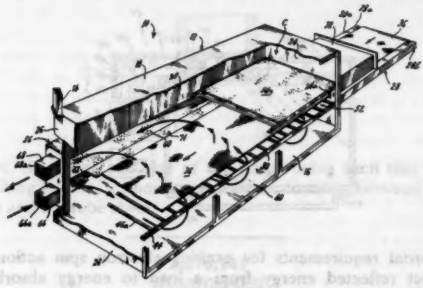
3,670,132

ENVIRONMENTAL CONTROL SYSTEM FOR MICROWAVE PROOFER

Harold B. Kaufman, Jr., New York; Robert F. Schiffmann, Brooklyn, and Ernest W. Stein, New York, all of N.Y., assignors to DCA Food Industries Inc., New York, N.Y.

Filed July 13, 1970, Ser. No. 54,157
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 22 Claims

An environmental control for a microwave cavity which provides a controlled air temperature and relative humidity in the cavity particularly suitable for use in a microwave proofer in which a yeast-leavened dough is proofed and matured by exposing dough pieces to a microwave field of an intensity and duration to elevate the temperature of the dough piece sufficient to initiate the generation and expansion of gases in the dough piece and the complete proofing thereof.

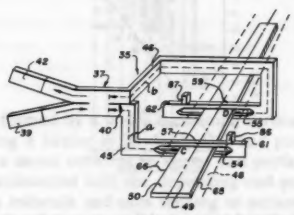


3,670,133

MICROWAVE DRYING APPARATUS AND METHOD

Lambertus Admiraal, Coquitlam, British Columbia, Canada, assignor to MacMillan Bloedel Limited, Vancouver, British Columbia, Canada

Filed June 3, 1971, Ser. No. 149,651
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 18 Claims



Apparatus and method for drying moisture-laden dielectric materials by microwave energy and including directing microwave energy from a generator to opposite sides of material to be dried. Means is provided for protecting the generator from microwave energy reflected by the material. It is preferable to include means for controlling the output of the generator in accordance with the moisture content of the portion of the material exposed to the microwave energy. This is accomplished by measuring energy transmitted through the material, and controlling the output of the generator inversely relative to the level of the transmitted energy.

3,670,134

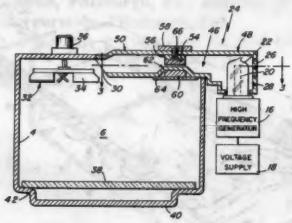
MICROWAVE OVEN NO-LOAD SENSOR

Arnold M. Bucksbaum, Cedar Rapids, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa

Filed Jan. 26, 1971, Ser. No. 109,818
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 12 Claims

A no-load sensor is disclosed for protection of the electromagnetic wave energy generator in an electronic heating apparatus including a magnetized body of a ferrimagnetic material disposed within the waveguide launching section. Improved magnetic field producing means include a field concentrator associated with a permanent magnet member. Embodiments are also provided within a waveguide

launching section having a reduced cross-sectional area adjacent to the ferrimagnetic body to concentrate propagated electromagnetic waves with a resultant decrease in the



material requirements for exciting electron spin action to direct reflected energy from a load to energy absorbing means.

3,670,135

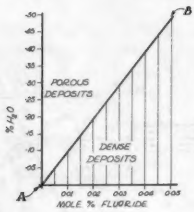
ARC WELDING ELECTRODE AND PROCESS FOR STAINLESS STEEL

Albert J. Zvanut, Whittier, Calif., assignor to Stoody Company

Continuation-in-part of application Ser. No. 879,045, Nov. 24, 1969, now Patent No. 3,585,352, which is a continuation-in-part of application Ser. No. 777,405, Nov. 20, 1968, now abandoned. This application June 2, 1971, Ser. No. 149,271

Int. Cl. B23k *9/00*

U.S. Cl. 219—137 **18 Claims**



There is disclosed an arc welding process for stainless steel and a flux-cored electrode particularly useful therein which is formulated of components having relatively low moisture absorptivity.

3,670,136

ELECTRIC DISCHARGE MACHINING METHOD AND APPARATUS

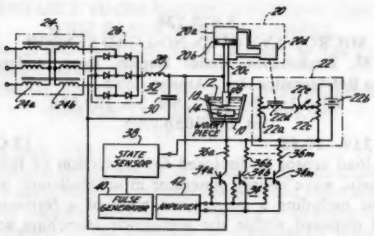
Nagao Saito, and Kazuhiko Kobayashi, both of Nagoya, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Chiyoda-ku, Tokyo, Japan

Filed Feb. 2, 1970, Ser. No. 7,898

Claims priority, application Japan, Feb. 4, 1969, 44/8326

Int. Cl. B23p *1/08*

U.S. Cl. 219—69 C **7 Claims**



Upon electric-discharge machining a workpiece by intermittently applying pulse voltages across a gap between it and the opposed electrode, a pause time following each pulse voltage is adjusted by predetermined small incremental amounts in accordance with the voltage conditions developed across the gap.

3,670,137

METHOD OF SPARK SINTERING ELECTRICALLY CONDUCTIVE PARTICLES ONTO A METALLIC SUBSTRATE

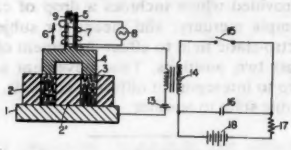
Kiyoshi Inoue, Tokyo, Japan, assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Continuation of application Ser. No. 611,497, Nov. 30, 1966, now abandoned, which is a division of application Ser. No. 356,714, Apr. 2, 1964, now Patent No. 3,340,052, dated Sept. 5, 1967, which is a continuation-in-part of application Ser. No. 247,387, Dec. 26, 1962, now Patent No. 3,250,892, dated May 10, 1966. This application Feb. 16, 1970, Ser. No. 10,090

Claims priority, application Japan, Dec. 26, 1961, 36/47409

Int. Cl. B23k *9/04*

U.S. Cl. 219—76 **3 Claims**



A method of spark sintering electrically conductive particles, e.g. copper, nickel, ferrochromium and tungsten carbide, onto a metallic substrate (e.g. of nickel, iron or steel) in which a mass of particles is positioned along the substrate in light-contacting relationship therewith. An electric current pulse is applied across the mass of particles to effect a spark discharge among them and between the mass and the substrate to sinter the particles to one another and to the substrate. The method also increases the fatigue resistance of iron and steel when tungsten carbide is spark-sintered thereto.

3,670,138

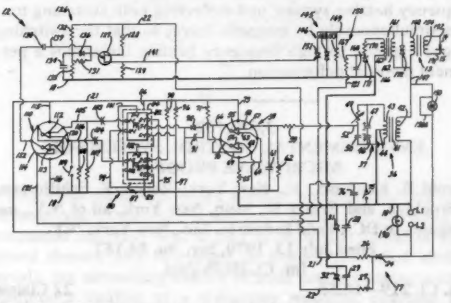
WELDING EQUIPMENT

Lester C. Schmiege, and Wendell C. Zeluff, both of Kalamazoo, Mich., assignors to American Wire Cloth Company, Parchment, Mich.

Continuation-in-part of application Ser. No. 722,326, Apr. 18, 1968, now Patent No. 3,553,416. This application Dec. 7, 1970, Ser. No. 95,828

Int. Cl. B23k *9/10*

U.S. Cl. 219—114 **5 Claims**



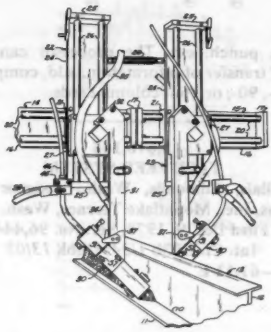
A welding apparatus including a pair of electrodes connected by elongated electrical conductors to a transformer

and a circuit for controlling the duration and strength of the welding current. One electrode is mounted upon a handle containing a normally open switch which is closed when said one electrode is pressed against an object. Closure of said switch initiates a current flow which is accurately terminated after a predetermined period of time controlled by the circuit.

3,670,139
WELDING HEAD

Anthony K. Pandjiris, St. Louis; Arthur I. Frederick, Webster Groves, and Edward J. Weinfurt, St. Louis, all of Mo., assignors to The Pandjiris Weldment Co., St. Louis, Mo.

Filed Dec. 21, 1970, Ser. No. 99,924
Int. Cl. B23k *9/00*
U.S. Cl. 219—130 **11 Claims**



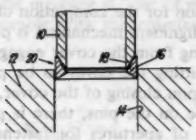
A welding head having a wire guide tube, through which a welding wire extends, located in and positioned longitudinally of a housing with its wire discharge and in alignment with a flux discharge opening provided in the housing. A plate, made of electrically insulating material, is slidably mounted on the housing and is connected to the wire guide tube for longitudinal adjustment of the nozzle to determine the amount of projection of the welding wire through the flux discharge opening. The plate includes a guide portion extending into an elongate slot formed in and arranged longitudinally of the housing, the guide portion cooperating with the slot margins to guide the plate, and hence the wire guide tube, longitudinally of the housing. Fastening means, made of an electrically insulating material, extends through an elongate hole formed in the plate and arranged longitudinally of the housing, the fastening means interconnecting the plate and housing to retain the plate in longitudinally adjusted positions. Pivot means mount the wire guide tube to the plate on a transverse axis, while wire guide tube-pivoting means selectively move the wire guide tube about the axis to adjust the position of the wire discharge end laterally of the flux discharge opening.

3,670,140
JOINING OF TUBES TO TUBE PLATES

Daniel Frank Thomas Roberts, Kent, England, assignor to Foster Wheeler John Brown Boilers Limited, London, England

Filed Feb. 24, 1970, Ser. No. 13,460
Claims priority, application Great Britain, Feb. 27, 1969, 10,519/69
Int. Cl. B23k *9/10*
U.S. Cl. 219—137 **3 Claims**

This invention relates to the joining of tubes to tube sheets in alignment with bores through the latter. These bores are slightly larger in diameter than the outside diameters of the tubes. An annular filler insert is positioned adjacent the end of the bore in engagement with the end of the tube. When a non-consumable electrode arc weld is made, the insert melts and becomes united with the end of the tube and the tube

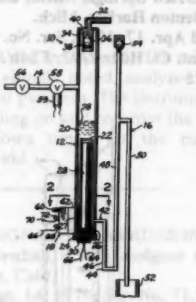


sheet, the shape and size of the insert being such that the resulting join has a smooth crevice-free contour, between the tube and the tube sheet.

3,670,141
HUMIDIFIER

David R. Dines, 4801 N. W. 34, Oklahoma City, Okla.

Filed Apr. 15, 1971, Ser. No. 134,249
Int. Cl. F22b *1/28*
U.S. Cl. 219—271 **5 Claims**

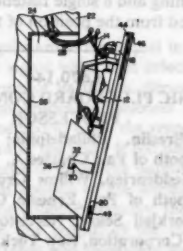


A boiler formed by a water containing vertically disposed casing having a heater in its depending end portion is provided with a steam outlet at its upper end portion. An overflow tube, connected with the depending end portion of the case, drains minerals and salts tending to accumulate in the bottom of the casing. A thermal switch secured to the depending end of the case operates a water flow controlling solenoid valve which refills the casing in response to temperature changes of the casing in converting water contained thereby to steam.

3,670,142
RECESS MOUNTED ELECTRIC AIR HEATER

John T. Attridge, Monroe, Conn., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 26, 1970, Ser. No. 40,494
Int. Cl. H05b *3/02*; F24h *3/04*
U.S. Cl. 219—367 **6 Claims**



A recess mountable electrical appliance is provided with a cover supporting on its inner surface the working elements of the appliance and also means for temporarily securing the

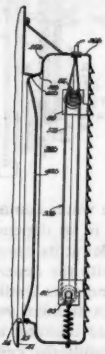
cover in a tilted open position for access to the inner surface upon placement in a recess. The invention is particularly applicable to electrical heaters for wall mounting in which the cover is placed within the recess and temporarily secured in a tilted open position for the completion of electrical connection. A tilt and alignment mechanism is provided, such as by brackets extending from the cover engaging pins within the recess, for permitting the cover to be placed in the tilted open position. Upon closing of the cover, while the brackets on the cover side on the pins, there is preferably provided direct alignment of apertures for fasteners to permanently secure the cover to an underlying support. Other features include a deflector partially enclosing a heater element to define a primary air path over the heater element while also permitting a secondary air path to the rear of the deflector. Also, a front grill is provided that is secured to the cover by an overhanging edge disposed in a groove in the upper edge of the cover and a single fastener secures the grill and cover proximate the lower edge thereof.

3,670,143

ELECTRIC HEATING UNIT FOR CLOTHES DRYERS

Fred J. Zenz, Berrien Springs, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Apr. 17, 1970, Ser. No. 29,388
Int. Cl. H01c *1/02*; F24h *3/04*
U.S. Cl. 219—375 **12 Claims**



A heater box assembly for an electrically heated clothes dryer has a pair of spaced insulators with a wire heating element wound around the two insulators and with adjacent turns spaced apart. The support for the heating unit includes at least one spring acting on at least one insulator to apply a tension on the wire heating element to compensate for the change in length of the wire element due to thermal expansion. The box-like support is snugly received in a flanged opening of a wall of the dryer to form the heated air inlet for the dryer and mounting means including one or more tabs on the box for insertion into one or more corresponding slots in the flanged opening and a single fastener for securing the box at a side removed from the position of the slot or slots.

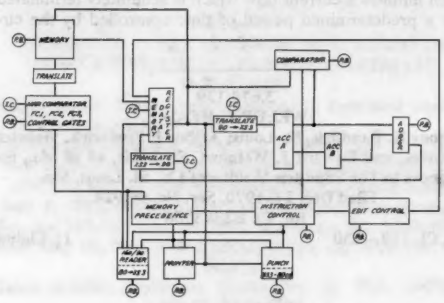
3,670,144

ELECTRONIC PLUGBOARD CONTROLLED DATA PROCESSOR

Mary Anne Bresiin, Philadelphia; George R. Cogar, Doylestown, both of Pa.; Charles A. Lee, Stamford, Conn.; Donald O. Neddenriep, Willow Grove; Albert J. Romeo, Springfield, both of Pa.; Ernesto G. Sevilla, New York, N.Y., and Torkjell Sekse, Norristown, Pa., assignors to Sperry Rand Corporation, New York, N.Y.

Filed June 18, 1962, Ser. No. 203,071
Int. Cl. G06f *7/12, 7/00, 15/00*
U.S. Cl. 235—61.9 **21 Claims**

An electronic processing unit having solid state components and including a punched card reader, printer and punch output, and plugboard program for controlling the operations of start, stop, read, add, subtract, compare, insert,



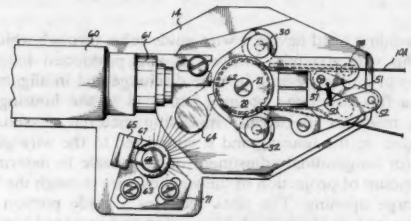
delete, print, punch, etc. The processor can perform the operations of transfer of information, add, compare, and edit. It can use 80-, 90-, or 160- column cards.

3,670,145

TAPE FEED SYSTEM

David C. Allais, Edmonds, Wash., assignor to Interface Mechanisms, Inc., Mountlake Terrace, Wash.

Filed Dec. 9, 1970, Ser. No. 96,444
Int. Cl. G03b *1/24*; G06k *13/05*
U.S. Cl. 235—61.11 E **8 Claims**



A tape feed system together with an optical reader for reading data from the tape. A drive capstan having inner and outer flanges defining a tape holding region is driven by a step motor. One of the flanges is spring-loaded so that the tape is gripped between the two flanges. Spring-loaded tape guide devices located above and below the center of the capstan each have idler wheels urging the tape against the capstan in an arrangement such that the tape passes around substantially more than 90° of the capstan. A cylindrical lens and light source provides light in a slit pattern on the flat surface so that high intensity light is reflected to the reader for reading data from the tape.

3,670,146

SIGNAL CONVERTER

Gill Gunnar Soderstrom, Rorstrandsgatan 37, Stockholm; Bertil Nilsson, Pettersbergsvagan 86, Hagersten, and Nils Evert Johan Stahl, Hjortstigen 18, Stocksund, all of Sweden

Filed Dec. 4, 1969, Ser. No. 882,752
Int. Cl. G06k *7/08*; G11b *5/00*
U.S. Cl. 235—61.11 D **7 Claims**

In a signal converter for reading of information recorded on a magnetic tape and for conversion of said information to a language suitable for punched tape, data tape, data communication or the like, the magnetic tape comprising two information-carrying channels, one of which contains digit bits and the other the corresponding inverse digit bits, and each

digit having a control bit which starts the digit, and the signal converter comprising

a magnetic tape reader for successive reading of the bits in the information-carrying channels,

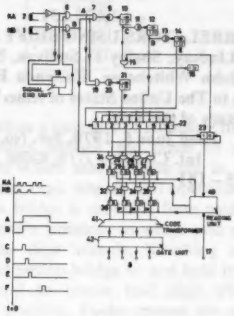
a digit store with a number of locations for parallel storage of a digit, which number corresponds to the number of digit bits per digit,

a code transformer for re-coding the stored information to the suitable language, and

a reading unit for the release of each one of the digits thus re-coded,

the improvement which resides in that the signal converter includes

1. a synchronizing chain connected between the reader and the digit store and provided with a starting step,



2. a number of intermediate steps corresponding to the number of digit bits per digit, and
3. an end step, where the control bit, which is simultaneously recorded in both channels mentioned, is arranged partly to re-set the chain and partly to 1-set the first intermediate step of said chain when reading the first digit bit, said digit bits and said inverse digit bits being arranged to successively 1-set the successive steps of the chain, and
4. a number of gates corresponding the number of intermediate steps with an input connected to the corresponding intermediate step and another input connected for being fed from the channel containing the digit bits, so that each respective gate is opened for each digit bit in order to transmit said bit to the location in the digit store which corresponds to its position.

3,670,147

ELECTRONIC INSTRUMENT FOR DETERMINING AND TOTALIZING THE REPETITIVE OPERATION OF A MATERIAL FABRICATING MACHINE

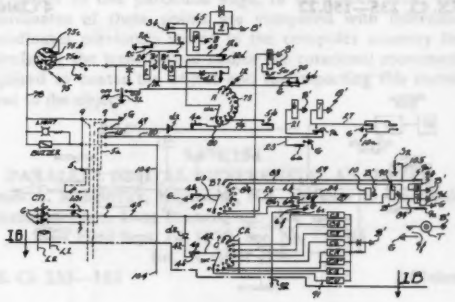
Richard B. Wright, 448 Saint Andrews Drive, Akron, Ohio

Filed Oct. 3, 1969, Ser. No. 863,493

Int. Cl. H03k *23/03*

U.S. Cl. 235—92 J **4 Claims**

An electronic instrument for determining and totalizing the operation and production output of a material fabricating machine such as a machine tool lathe, punch press, drill press and the like, and which instrument includes an element that is responsive to a workpiece fabricating member of the machine to actuate a counter or recorder capable of sensing the workpiece fabricating performance of the said member and totalizing the number of fabricating cycles of said machine. The instrument also includes switch means actuatable by the operator to indicate that the machine is temporarily out of production for a selective predetermined interval such as, for example, the interval required for setting up the machine preparatory to production, repair and/or adjustment of tools thereof. A timing device actuatable by the switch means which device is identifiable with the particular purpose(s) for which said machine is "out of production" or in "down time" is operable with the counter or recorder to



record the reason(s) or purpose(s) for said "down time" whereby it may be visually noted, analyzed and utilized for corrective and record purposes. The instrument includes timing means for recording on said recorder the total production time and total "down time" for the machine for any preselected time period.

3,670,148

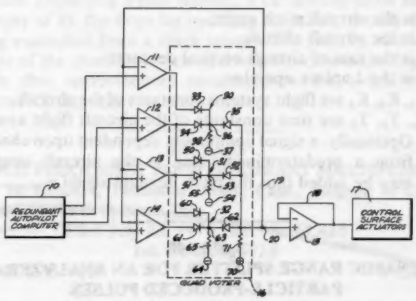
SELECTIVE SIGNAL TRANSMISSION SYSTEM

Adrian J. Moses, Newhall, Calif., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Sept. 14, 1970, Ser. No. 71,751

Int. Cl. G06f *15/50, 11/00*

U.S. Cl. 235—150.2 **13 Claims**

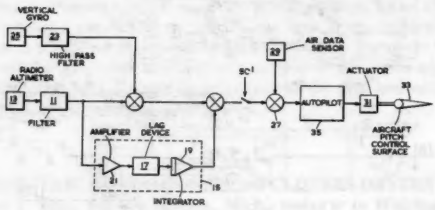


A plurality of high-gain amplifiers equal in number to the number of inputs of a signal voter that selectively transmits the signal applied to one of its inputs, depending upon the relative input signal amplitudes is disclosed. The outputs of the amplifiers are connected to drive the respective inputs of the voter and the output of the voter is fed back to the inputs of the amplifiers in a sense to cause the output of the voter to track an external signal applied to the amplifier driving the transmitting input of the voter. Preferably, the amplifiers are of the differential type, the output of the voter being connected to the inverting input and redundant autopilot computers being coupled to the respective non-inverting inputs, and the output of the voter is coupled by an isolating operational amplifier to aircraft control surface actuators.

3,670,149
AUTOMATIC FLIGHT CONTROL SYSTEMS

William Terence Parkman, and James Kenneth Maxwell MacCormac, both of London, England, assignors to Elliott Brothers (London) Limited, London, England

Filed Jan. 28, 1970, Ser. No. 6,371
Claims priority, application Great Britain, Jan. 29, 1969, 5,069/69
Int. Cl. G06g 7/78; B64c 13/50
U.S. Cl. 235—150.22 4 Claims



The specification discloses an aircraft control apparatus for supplying a "flare-out phase" pitch demand signal for an aircraft automatic pilot of such a character as to render the autopilot less dependent on the values of the aircraft flight system constants which are subject to variation from aircraft to aircraft as a result of tolerances in manufacture. The control apparatus develops an electrical pitch demand signal represented by:-

$$\eta_{dflare}=\left[K_1(h+K_2\dot{h})\cdot\left(1+\frac{1}{T_1 s(1+T_2 s)}\right)+\frac{K_3 s\theta}{1+T_3 s}\right]$$

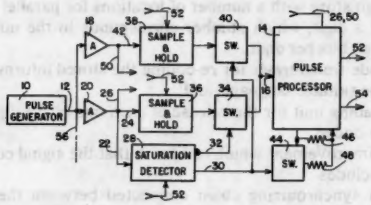
where
θ is the aircraft pitch angle,
h is the aircraft altitude,
$\dot{h}$ is the rate of aircraft vertical descent,
s is the Laplace operator,
K_1, K_2, K_3 are flight systems constants of the aircraft,
T_1, T_2, T_3 are time constants of the aircraft flight system.
Optionally, a signal component dependent upon changes from a predetermined value in the aircraft airspeed may be added into the pitch demand signal η_{dflare}.

3,670,150
DYNAMIC RANGE SPLITTER FOR AN ANALYZER OF PARTICLE-PRODUCED PULSES

Walter R. Hogg, Miami Lakes, and David R. Figueroa, Hialeah, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed May 4, 1970, Ser. No. 34,189
Int. Cl. H03k 17/30, 5/20
U.S. Cl. 235—151.3 26 Claims

Generated pulses, having random amplitudes relative to particle sizes which lie in an especially wide range, are fed into a plurality of parallel channels, at the input of each of which there is an amplifier. Each amplifier has a different amplification factor and saturates in response to a correspondingly related maximum input pulse magnitude, so as to define a subrange of acceptable pulses. Saturation of a particular amplifier disables its channel and enables the adjacent, lower amplification, higher channel to accept or be saturated by the same pulse. Each pulse, when accepted by a channel, is further processed for particle analysis purposes. During the processing, the pulse amplitude is reduced by the

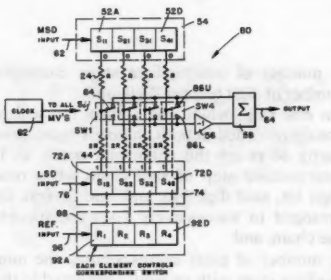


same amplification factor as that of the accepting channel, so as to return all pulses to their initial relative amplitudes.

3,670,151
CORRELATORS USING SHIFT REGISTERS

George F. Lindsay; Shelby F. Sullivan, both of Arcadia, and Harper John Whitehouse, Hacienda Heights, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed June 5, 1970, Ser. No. 43,880
Int. Cl. G06g 7/19; G06f 15/34
U.S. Cl. 235—181 7 Claims



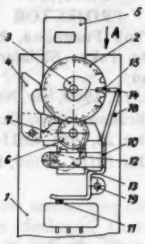
A correlator comprising a set of multivibrators which are serially connected to form a shift register, each multivibrator having a set and a reset output lead, indicating its binary state. Each multivibrator is connectable to a clocking source for shifting the states of the multivibrators. One of the multivibrators at one end of the series, the input multivibrator, is connectable to a source of signals, generally bilevel signals or pulses, each pulse having a predetermined time duration or a multiple thereof. Means are operatively connected to the output leads of the multivibrators for summing the outputs of the multivibrators for each shift of binary states, the sum being a maximum for a particular combination, or coding, of binary states of the multivibrators of the shift register. The means may comprise a plurality of output resistors, one for each multivibrator, each resistor having one end, the input end, connected to one only of a set or reset output lead of a multivibrator, the specific combination of connections being chosen in a manner so that, with an applied input signal, a particular combination of binary states of the multivibrators will result in a maximum total output signal.

3,670,152

RESET ERROR DETECTING PULSE COUNTER

Kurt Kratt, Aldingen, Germany, assignor to J. Hengstler K.G., Aldingen, Germany

Filed Mar. 30, 1970, Ser. No. 23,689
Claims priority, application Germany, June 20, 1969, P 19 31 367.8
Int. Cl. G06c 15/42
U.S. Cl. 235—144 HC 21 Claims



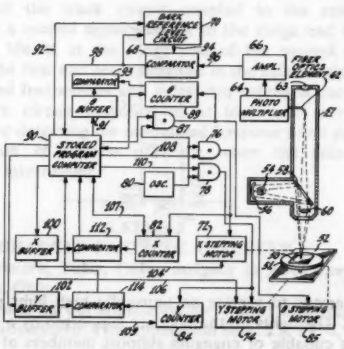
The counter comprises a plurality of rotatable digit wheels. A pinion bridge carries pinions and tends to assume an operative position, in which said pinions are in mesh with respective ones of said digit wheels and operable to rotate the same. The pinion bridge is movable from said operative position to an inoperative position, in which said pinions are disengaged from said digit wheels. Resetting means are operable to move said pinion bridge to and hold it in said inoperative position and to rotate said digit wheels to a predetermined reset position. Feeler means are engageable with said digit wheels and said pinion bridge and operable to a reset-confirming position when, and only when, said digit wheels and said pinion bridge are in said predetermined reset position and said operative position, respectively. Indicating means are adapted to derive from the position of said feeler means an indication when said feeler means are operated to a position short of said reset-confirming position.

3,670,153

MACHINE IMPLEMENTED METHOD FOR POSITIONING AND INSPECTING AN OBJECT

Lawrence Arnold Rempert, Ringoes, and Edward Philip Helpert, Kendall Park, both of N.J., assignors to RCA Corporation

Filed Oct. 8, 1970, Ser. No. 79,055
Int. Cl. G06f 15/46
U.S. Cl. 235—151.11 11 Claims



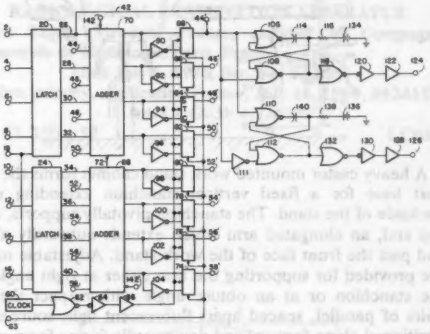
The object it is desired to position has areas thereon whose peripheral edges are boundries between light and dark regions. For example, the areas may be metal electrodes which appear light and are located on a dark substrate. This object is placed beneath a light-sensing element such as an optical fiber. The object is then scanned in different directions under computer control, by producing relative movement between it and the light-sensing element to ascertain the shapes of a number of these areas, and the position within each such area of a characteristic point such as the center of gravity or the center of one particular edge, of each such area. The coordinates of these points are compared with reference coordinates previously stored in the computer memory for calculating the translational and/or the rotational movement required to center the object and for imparting this movement to the object.

3,670,154

PARALLEL DIGITAL DIFFERENTIAL ANALYZER

James A. McMurray, Highlands, N.J., assignor to Electronic Associates Inc., Long Branch, N.J.

Filed Sept. 14, 1970, Ser. No. 71,883
Int. Cl. G06f 7/38
U.S. Cl. 235—152 2 Claims



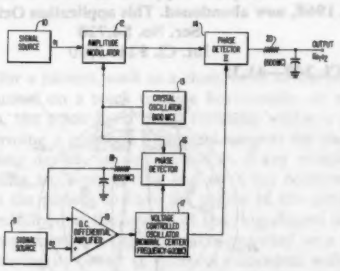
The specification discloses a parallel digital differential analyzer employing a first register, a circulating adder and a plurality of JK flip-flops for updating the adder, the flip-flops being controlled from a clock source. The polarity and magnitude of the overflow is detected by polarity sensitive logical single shot multivibrators connected to the output of a selected JK flip-flop.

3,670,155

HIGH FREQUENCY FOUR QUADRANT MULTIPLIER

Paul H. Grobert, Thousand Oakes, Calif., assignor to Communications & Systems, Inc.

Filed July 23, 1970, Ser. No. 57,480
Int. Cl. G06g 7/16
U.S. Cl. 235—194 7 Claims



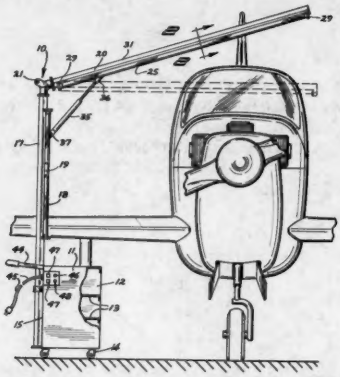
There is disclosed a four quadrant multiplier for producing the bi polar product of a pair of extremely high frequency

sgined signal voltages. The invention features the use of a conventional analog mixers and a phase linearizing loop to achieve four quadrant multiplication with low distortion.

3,670,156
PORTABLE WORK STAND CABINET AND ILLUMINATION SOURCE UNIT

Donald R. Schmidt, Route 1 P.O. Box 93 B, Worthington, Minn.

Filed Oct. 5, 1970, Ser. No. 77,936
Int. Cl. F21v *33/00*
U.S. Cl. 240—2 **6 Claims**

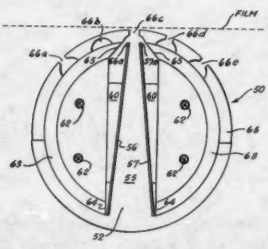


A heavy castor mounted work stand cabinet forms the support base for a fixed vertical stanchion extending up a backside of the stand. The stanchion pivotally supports, at its top end, an elongated arm which extends outwardly above and past the front face of the work stand. Adjustable means are provided for supporting the arm either at right angles to the stanchion or at an obtuse angle with respect thereto. Pairs of parallel, spaced apart fluorescent light sources are positioned along forward and downwardly facing faces of the stanchion and of the arm, respectively, and the faces of the stanchion and the arm are each provided with surfaces of high light reflecting capability, said surfaces facing outwardly from each other at an obtuse angle. The weight and length of the arm and the weight of the stand are such that the device will not tip even when the stand is empty and the arm is in its horizontal position. Shelves in the cabinet are provided for the storage of work tools and supplies which, when so stored make the unit more stable and less susceptible to accidental tipping.

3,670,157
REFLECTIVE CONDENSING SYSTEM FOR CONCENTRATING ILLUMINATION AT AN APERTURE

Herbert E. Bragg, Mansfield Township, Warren County, N.J., assignor to De Luxe General Incorporated, New York, N.Y.

Continuation-in-part of application Ser. No. 739,772, June 25, 1968, now abandoned. This application Oct. 28, 1970, Ser. No. 84,720
Int. Cl. F21v *7/00*
U.S. Cl. 240—41.35 **4 Claims**



The final condensing lens element, commonly used in a system for concentrating light at an aperture, is replaced by light restricting path means forming a transversely unobstructed, open ended light path. Spaced, opposed front surface mirrors define a portion of the path along which light is reflected back and forth between the mirror surfaces to emerge at the open end as a uniform flood of light. The absence of transverse surfaces avoids any collecting of dirt which would cause streaks to be printed on film printed with the concentrated light.

3,670,158
PROJECTOR

Norio Suzuki, and Yoji Furukawa, both of Kawasaki-shi, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

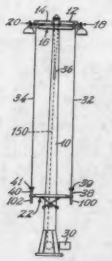
Filed Oct. 13, 1969, Ser. No. 865,814
Claims priority, application Japan, Oct. 15, 1968, 43/89496; Dec. 28, 1968, 43/114282
Int. Cl. F21r *13/14, 17/00*; F21m *3/18*
U.S. Cl. 240—41.5 **3 Claims**

A projector comprising a lamp unit enclosing a concave reflector, a light source disposed at a vicinity of focus point of said reflector, a front lens secured at the open end of said reflector, and a retaining ring engaged to the peripheral edges of said lamp unit is mounted on a supporting frame by means of the adjusting screws and a coil spring which resiliently biasing said lamp unit to the frame. The frame is provided on its inner surface with projections which engage the outer surface of the reflector, whereby adjustment of the adjusting screws renders the lamp unit slidably movable so as to aim the optical axis without using a mounting ring.

3,670,159
HIGH LEVEL LIGHT PALE INCLUDING MEANS FOR LOWERING LIGHTS FOR SERVICING

Paul A. Millerbernd, 230 McLeod Avenue West, Winsted, Minn.

Filed May 13, 1970, Ser. No. 36,896
Int. Cl. F21v *21/36*
U.S. Cl. 240—65 **9 Claims**



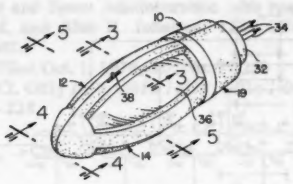
Apparatus to service an unusually high light pole is disclosed. The lights on the pole are supported by a ring having latches capable of engaging support members at the top of the pole. The lights are lowered by moving a retriever ring up the pole to disengage the latches and carry the support ring to the bottom. Motive power is supplied by an electric motor which is connected to the retriever ring by three steel cables traveling up the inside of the pole and over pulleys at the top of the pole.

3,670,160

LAMP AND SOCKET DECORATIVE LOCKING DEVICE

Leonard B. Flowers, 753 Valley Chase Road, Bloomfield Hills, Mich., and Vincent F. Okuniewski, 5136 Gerald Street, Warren, Mich.

Filed May 20, 1971, Ser. No. 145,348
Int. Cl. F21v *15/00*
U.S. Cl. 240—102 A 10 Claims



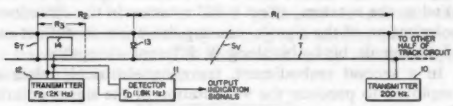
A decorative protective and locking closure for a lamp and socket combination is disclosed. Complementary section members have interlocking features which, when engaged, provide a protective closure and covering device secured about a lamp and socket combination so that the lamp cannot be removed without disengagement of the complementary section members forming the closure.

3,670,161

COMBINED HIGH AND LOW FREQUENCIES FOR TRACK CIRCUIT

Henry C. Sibley, Adams Basin, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed May 4, 1970, Ser. No. 34,236
Int. Cl. B61l *23/30*
U.S. Cl. 246—40 6 Claims



A continuous rail alternating current track circuit has been provided having shunts at extreme ends for terminating the circuit. A track transmitter is coupled to the rails for center feeding the circuit with a first signal having an associated effective range less than the distance to the shunt. The improvement for providing accurate detection of a vehicle shunt between the termination shunt and the end of the effective range of the signal includes a transmitter located at each end of the track circuit coupled to the rails for propagating a second signal at least to the range end of the first signal. Means at the range end of the second signal modulates the first and second signals in the rails to high and low side-band frequencies and a detector means at each end of the track circuit responds to at least one side-band frequency for detecting the modulated frequency and providing indication of vehicle presence when the side-band frequency is interrupted.

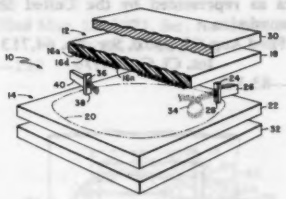
3,670,162

CHARGED PARTICLE ANALYZER

Robert E. Elmore, Tulsa, Okla., assignor to Avco Corporation, Tulsa, Okla.

Continuation-in-part of application Ser. No. 61,068, Aug. 5, 1970, now abandoned. This application Sept. 23, 1970, Ser. No. 74,694
Int. Cl. H01j *39/34*
U.S. Cl. 250—41.9 ME 18 Claims

A charged particle analyzer for analyzing charged particles with respect to their specific mass is disclosed. The charged particle analyzer employs the principle of crossed electric and magnetic fields to obtain perfect double focusing and high resolution. The electric field is radial in direction and proportional in magnitude to the radius of the analyzer at any



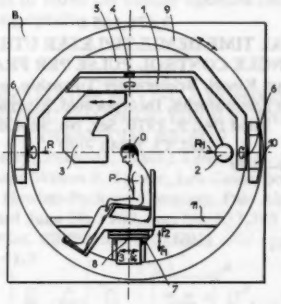
point in the flight cylinder and is normal to the magnetic field. A suitable source of ions is provided to permit introduction of ions into the analyzer and a suitable ion receiver is provided to receive ions from the analyzer.

3,670,163

RADIOLOGICAL EXAMINATION APPARATUS

Pierre Lajus, Meudon, France, assignor to Compagnie Generale de Radiologie, Paris, France

Filed July 6, 1970, Ser. No. 52,305
Claims priority, application France, July 16, 1969, 6924187
Int. Cl. G03b *41/16*
U.S. Cl. 250—50 1 Claim

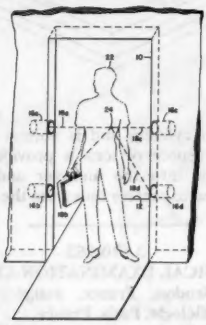


A support for a patient, such as a chair, table or the like, is movably mounted on a track to slide horizontally, or move up and down, the track itself being rotatable within a ring-like frame forming a common structural support for the patient supporting device, as well as for an X-ray examining system including an X-ray source and an X-ray receiver, so as to position the patient to have the region of the patient's body to be examined at the center of the ring-shaped structure. The X-ray examining device itself is mounted on a two-axis gimbal, having its center of rotation coincident with the center of the ring-shaped structure, so that the same region of the patient's body can be examined from all angular positions in three dimensions, that is, can be spherically examined.

3,670,164
PERSONNEL PLUTONIUM MONITOR

Richard W. Hardy, Santa Barbara; Robert B. Knowlen, Goleta; Cecil W. Sandifer, and William C. Plake, both of Santa Barbara, all of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Aug. 18, 1970, Ser. No. 64,713
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 R 5 Claims

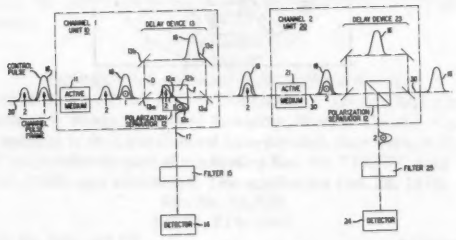


A system for monitoring a zone for the presence of a source of plutonium in which the updated background level of gamma rays is compared with the readings obtained when a possible carrier of a gamma ray source enters the zone. Counting is initiated, and an alarm is sounded when the counting after a predetermined period of time accumulates to a value in excess of the background total plus a significant statistical deviation as a factor of the background total.

3,670,165
OPTICAL TIME DEMULTIPLEXER UTILIZING A SINGLE CONTROL PULSE PER FRAME

Tracy Stewart Kinsel, Bridgewater Township, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 9, 1970, Ser. No. 96,438
Int. Cl. H04b *9/00*
U.S. Cl. 250—199 7 Claims

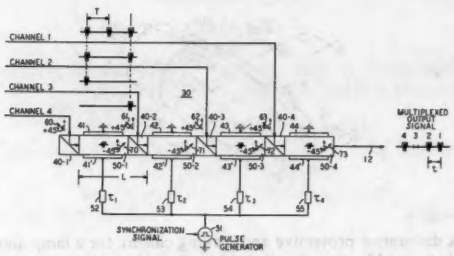


A single optical control pulse per frame is utilized to spatially separate the linearly polarized channel pulses of time multiplexed optical PCM signal in an optical time demultiplexer, the basic unit of which comprises an active medium in which birefringence can be optically induced, a polarization separator in optical series therewith to deflect out of the unit channel pulses to be detected, and a delay device which selectively delays the control pulse and causes it to by-pass the separator. A plurality of such units, equal in number to the number of channels to be demultiplexed, are disposed in optical series in the transmission path of the signal.

3,670,166
TIME DIVISION MULTIPLEX OPTICAL COMMUNICATION SYSTEM

Ivan Paul Kaminow, New Shrewsbury, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 28, 1970, Ser. No. 101,980
Int. Cl. H04b *9/00*
U.S. Cl. 250—199 9 Claims



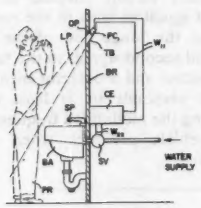
Time-division multiplexing and demultiplexing of N optical, pulse code modulated signals is achieved by means of a cascaded array of N polarization rotators and associated polarization selective prisms. At the multiplexer, the N pulse-encoded signals, polarized along a first direction, are coupled bit-by-bit into the respective rotators by means of their associated prisms. Simultaneously, pulses, having a repetition rate equal to the bit rate of the individual signals are applied to all of the rotators, including a 90° rotation in the direction of polarization of the signals. This permits the signals to pass through the rotator-prism pairs and to enter into a common transmission path as a time-division multiplexed signal. At the receiver, the multiplexed signal enters a demultiplexer comprising an identical array of polarization rotators and polarization prisms. Simultaneously, synchronized pulses, applied to the rotators, effect a 90° rotation in the direction of polarization of the signals, causing the prism to deflect each of the signals, bit-by-bit along W different wavepaths.

In a second embodiment, traveling electrical pulses are employed to produce the 90° rotation of the signal polarization.

3,670,167
PROXIMITY SWITCHING EQUIPMENT

Norman Arthur Forbes, Louisville, Ky., assignor to American Standard Inc., New York, N.Y.

Filed May 14, 1970, Ser. No. 37,077
Int. Cl. H01j *39/12*
U.S. Cl. 250—221 12 Claims



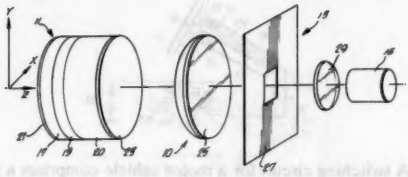
Covers equipment for a plumbing fixture, such as a wash basin, lavatory, etc., employing a photo-conductive cell structure mounted within a view tube pointed in the direction of the user of the plumbing fixture. The photo cell structure will recognize or respond to the presence or absence of a user in the vicinity of the plumbing fixture. The cell may act as a trigger or switch to initiate the operation of the plumbing fixture to transmit water therethrough and then control ap-

paratus to shut off the flow of water to the plumbing fixture after the user has removed his hands from the wash basin or has removed himself from the view of the photo cell structure.

3,670,168
LIGHT DIRECTION SENSOR

George M. Low, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Alan R. Johnston, 1226 Olivelane, La Canada, Calif.

Filed Oct. 1, 1970, Ser. No. 77,220
Int. Cl. G01j *1/36;* G01b *11/26;* G01c *1/00*
U.S. Cl. 250—225 15 Claims

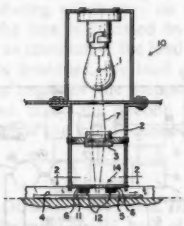


A light direction sensor is disclosed for providing third axis control of spacecraft. The light direction sensor comprises a direction-sensitive modulator positioned before a set of telescopic light gathering optics which, in turn, is followed by a detector. The direction-sensitive modulator comprises birefringent crystal means cut at suitable angles so that the retardation suffered by the light beam would be dependent upon the direction from which the light beam is incident upon the crystal means. The crystal means is coupled with an electro-optic phase modulator which adds a sinusoidal retardation to the light beam. The crystal means and modulator are positioned between crossed polarizers to convert the beam retardation to intensity varying at a certain frequency. The transmitted intensity is then collected by the telescopic optics and led to the detector.

3,670,169
COLOR GRADIENT DETECTOR DEVICE

Ephraim W. Hogue, Potomac, Md., assignor to The United States of America as represented by the Postmaster General

Filed Aug. 18, 1970, Ser. No. 64,724
Int. Cl. H01j *39/12*
U.S. Cl. 250—226 10 Claims

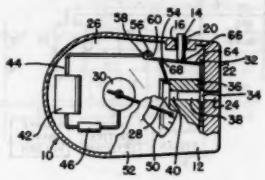


A color gradient detector device is disclosed, allowing for the performance of postal meter mark discrimination, which requires a scanning step followed by a signal producing and detecting step. The device has a sensor head connected to an electronic circuit comprising a dual input—single output signal amplifier followed by a signal discriminator and detector.

3,670,170
NON-VISIBLE ELECTROMAGNETIC RADIATION MEASURING DEVICE

John M. Stevens, Upper Darby, and Richard R. Maxwell, Media, both of Pa., assignors to John M. Stevens, West Chester, Pa.

Filed Mar. 15, 1971, Ser. No. 124,667
Int. Cl. G01d *5/34*
U.S. Cl. 250—229 7 Claims

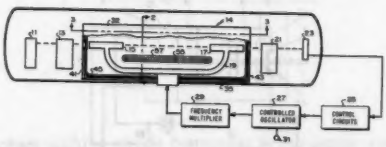


A non-visible electromagnetic radiation measuring device which incorporates a photoconductive cell responsive to electromagnetic waves of wavelength in the range of 3700 angstroms, a microammeter connected in series with the photoconductive cell and a variable resistor connected in the circuit to vary the current flow through the photoconductive cell. A switch has its arm connected to an apertured shutter and is responsive to an external push button to both close the photoconductive cell circuit and to simultaneously register the shutter aperture with an opening in the device housing which communicates with the photoconductive cell to thereby admit electromagnetic waves to the cell for measuring purposes. Release of the push button automatically releases the switch arm to both open the photoconductive cell circuit and to move the shutter aperture out of registry with the housing opening.

3,670,171
ATOMIC BEAM TUBE HAVING A HOMOGENIOUS POLARIZING MAGNETIC FIELD IN THE RF TRANSITION REGION

Richard F. Lacey, Peabody, Mass.; Leonard S. Cutter, Los Altos Hills, and Wilson S. Turner, Los Gatos, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed June 30, 1969, Ser. No. 837,398
Int. Cl. G01n *27/78;* H01s *1/00*
U.S. Cl. 250—41.3 8 Claims



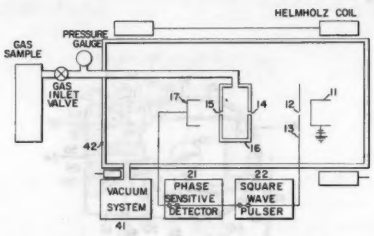
An atomic beam tube has a magnetic C-field region which produces a very uniform static magnetic polarizing field transverse to the path of the atomic beam. The C-field is produced by two coils wound inside a tubular member and longitudinally aligned with the atomic beam. The two coils are spaced apart a predetermined distance. A magnetic field-producing baffle shield is disposed in the C-field region adjacent to the atomic beam for assisting in the maintenance of a uniform C-field.

3,670,172

CHARGED PARTICLE GENERATING AND UTILIZING

David E. Golden, Cambridge, Mass., assignor to Advanced Research Instrument Systems, Inc., Austin, Tex.

Filed Apr. 20, 1970, Ser. No. 30,075
Int. Cl. G01n *23/02*
U.S. Cl. 250—43.5 R 18 Claims



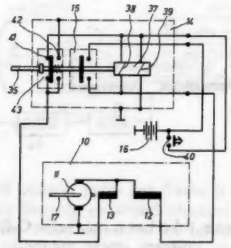
A cylindrical, retarding potential difference type electron monochromator with exceptionally high energy resolution includes an electron beam source having essentially zero transverse velocity in a region that is maintained essentially free from magnetic fields. This device can also be used as an electron energy analyzer. In the electron spectrometer the electron beam passes through a chamber having a gas to be analyzed and then impinges upon an electron collector or electron energy analyzer. A sawtooth scanning potential waveform is applied to the chamber; a square wave of higher frequency, to a retarder electrode. The collector current as a function of the instantaneous value of the sawtooth potential measures the electron resonances of the gas. The electron resonances identify the various constituents of the gas and determine the partial pressures of the individual constituents. The device described herein to produce a monoenergetic electron beam or to energy analyze an electron beam applies equally well to other charged particles such as atoms or molecules.

3,670,173

STARTING ARRANGEMENT FOR INTERNAL COMBUSTION ENGINES

Gerhard Pfluger, Markgroeningen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 18, 1970, Ser. No. 90,614
Claims priority, application Germany, Nov. 21, 1969, P 19 58 444.2
Int. Cl. F02n *11/08*
U.S. Cl. 290—38 R 10 Claims



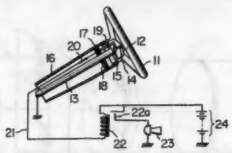
The electric starting motor for an internal combustion engine has its auxiliary field winding and series exciter coil so connected in an electric starting circuit that the field winding and exciter coil produce opposed magnetic fields that, together with the armature field, tend to turn, but do not actually turn, the armature shaft in reverse direction until the starting pinion and gear of the internal combustion engine mesh, whereupon a switch automatically changes the connection of the field winding so that the latter and the exciter coil produce aiding fields that, together with the armature field, turn the armature shaft in its normal direction.

3,670,174

SWITCHING CIRCUIT FOR ELECTRICAL DEVICES OF MOTOR VEHICLES

Naoji Sakakibara, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya-shi, Aichi-ken

Filed Dec. 23, 1970, Ser. No. 100,863
Claims priority, application Japan, Dec. 26, 1969, 44/1068
Int. Cl. H02g *3/00*
U.S. Cl. 307—10 R 6 Claims



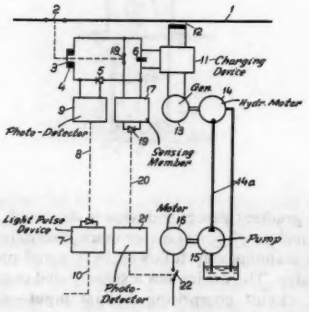
A switching circuit for a motor vehicle comprises a plurality of switches for a horn and other electrically operated devices of the motor vehicle, all these switches being disposed on the vehicle steering wheel so as to make common use of a single slip ring of a horn switch provided for electrical connection between the steering wheel and steering post of the motor vehicle in general. Upon closure of the horn switch, a horn relay connected between a bus and the collector of a transistor is energized to sound the horn since then conduction is caused in that transistor, whereas, when the other switches are closed, a constant voltage at a point between the switches and a constant voltage line of the switching circuit is divided into desired fractions by means of resistances provided respectively to those other switches and a fixed resistance provided between the aforesaid point and the constant voltage line. These voltage fractions are utilized to energize desired relays of the devices associated with the switches via transistors, zener diodes and the like.

3,670,175

ARRANGEMENT FOR SUPPLYING ENERGY TO DEVICES AS HIGH POTENTIAL, FOR EXAMPLE FOR OPERATING PURPOSES

Jorgen Zinck-Petersen, and Bertil Lundovist, both of Hokasen, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Dec. 18, 1970, Ser. No. 99,343
Int. Cl. H01h *3/26*
U.S. Cl. 307—64 8 Claims



An arrangement for supplying electric energy to operating, measuring and indicating devices placed at the potential of a

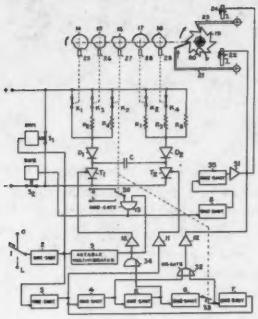
high voltage line. When current flows through the line, the energy is transmitted from the line to said devices through a saturated current transformer. When the line has no load, however, the energy is transmitted from an energy source at earth potential through a rotating electric generator at high potential.

3,670,176

SWITCHING ARRANGEMENT FOR DISCONNECTING HIGH VOLTAGE DIRECT CURRENT LINES

Werner Faust, Zentralstrasse 101, 5430 Wettingen, Switzerland

Filed Apr. 5, 1971, Ser. No. 131,143
Claims priority, application Switzerland, Apr. 10, 1971, 5325/70
Int. Cl. H01h *33/16*
U.S. Cl. 307—136 **6 Claims**



A switching arrangement for disconnecting a high voltage direct current line and commutating the line current includes a first isolator switch arranged in parallel to the commutating system and a second isolator switch arranged in series with this parallel circuit which latter is connected across the high voltage line through the second isolator switch. The commutating system includes two variable resistance branches connectible in parallel with the first isolator switch for commutating the load current, each such branch includes a controllable electric valve in series with the variable resistance, the valves are rendered conductive in alternation so that the resistance branches are likewise connected in alternation in parallel with the first isolator switch, and the values of the resistances in the respective branches are increased in steps in the time intervals during which they do not carry current. Disconnection of the line is initiated by opening the first isolator switch thus to commutate the load current to the two paralleled resistance branches, the load current is progressively reduced as a result of the stepped increases in resistance values, and lastly the second isolator switch is opened thus to complete the line disconnection.

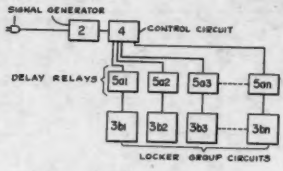
3,670,177

COIN-LOCKER CONTROL DEVICE

Komei Inoue, and Masayuki Iguchi, both of Himeji, Japan, assignors to Kabushiki Kaisha Kokuei Kikai Seisakusho, Himeji-shi, Hyogo-ken, Japan

Filed Dec. 14, 1970, Ser. No. 97,962
Claims priority, application Japan, Dec. 18, 1969, 44/120733
Int. Cl. G07f *5/18;* **H01h** *43/00*
U.S. Cl. 307—141.4 **8 Claims**

A coin-locker control device comprising a signal generator which produces a control signal when a unitary period of time has passed, a control circuit which successively generates operating signals by utilizing the control signal produced by the signal generator for every predetermined time difference, and a plurality of locker group circuits which are connected to the control circuit, and whose charge-day (or hour) - indication shifting operations are controlled by



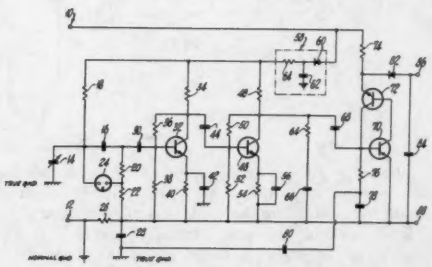
the operating signals produced for every predetermined time difference. After the locker group circuit of a preceding stage has been controlled, the locker group circuits of the following stages are individually and successively controlled without duplicate control.

3,670,178

CONTROL CIRCUIT WITH ANTI-SWITCHING AND ANTI-NOISE CIRCUITRY

Carl E. Atkins, Montclair, N.J., assignor to Wagner Electric Corporation

Filed Apr. 17, 1970, Ser. No. 29,548
Int. Cl. H02h *7/20*
U.S. Cl. 307—202 **5 Claims**



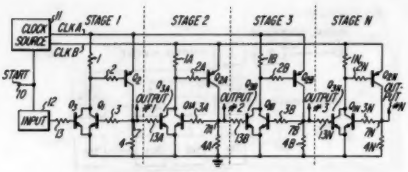
A phase-shifting circuit connected in the output circuit of the first amplifier stage in a control circuit causes cancellation of transient signals at the input terminals of the amplifier. The magnitude of such transients appearing on the neutral line is reduced by a resistance between nominal ground and the neutral line and a filtering capacitor between the neutral line and true ground. A safety capacitor connected between true ground and the bias circuit of a switch of the control circuit prevents a change in the state of the switch if the wrong circuit terminal is connected to the hot terminal of the power source. Circuitry for degrading the amplification of low-frequency sinusoidal components of the output of the final amplifier stage is provided.

3,670,179

ELECTRICAL CIRCUIT

Winthrop Seeley Pike, Princeton, N.J., assignor to RCA Corporation

Filed Oct. 22, 1970, Ser. No. 82,945
Int. Cl. G11c 19/00; H03k 23/08
U.S. Cl. 307—221 10 Claims



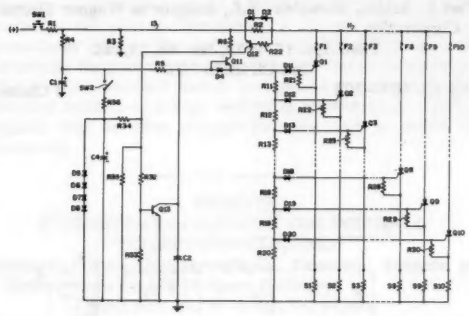
A shift register employing a plurality of complementary flip-flop circuits with noncapacitive interstage coupling.

3,670,180

INTERVALOMETER

Herbert P. Grossimon, Lexington; James O. McDonough, Concord, and James K. Roberge, Lexington, all of Mass., assignors to Concord Control Inc., Boston, Mass.

Filed Nov. 19, 1969, Ser. No. 877,893
Int. Cl. H03k 17/30, 17/28; F41f 3/04
U.S. Cl. 307—244 3 Claims



A solid-state rocket firing intervalometer is disclosed which employs a plurality of SCRs (silicon controlled rectifiers) for controlling the launching of respective electrically fired rockets, the gate circuit of each SCR being responsive to an input voltage above a predetermined threshold for triggering the SCR thereby to fire the rocket. The charging of a capacitor provides a progressively rising control voltage and a voltage divider applies a different portion of the rising control voltage to each of the gate circuits. Accordingly, each rocket is fired when the respective portion of the control voltage reaches the gate circuit threshold of the respective SCR.

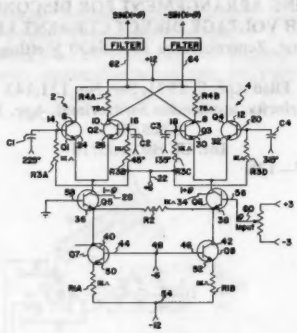
3,670,181

SHIFTING PHASE IN A TELEVISION CAMERA

Donald E. Pauly, Salt Lake City, Utah, assignor to Telemation, Inc., Salt Lake City, Utah

Filed Mar. 29, 1971, Ser. No. 128,839
Int. Cl. H03k 1/12
U.S. Cl. 307—262 6 Claims

Methods and apparatus for electrical phase shifting comprising a pair of transistor phase modulator circuits having the collectors of the transistors in each of the modulator circuits connected in a parallel summing relation to the collectors of the corresponding transistors in the other modulator circuit. The base of each transistor is biased with a square wave signal in a manner such that the phase of the signal applied to each transistor is 180° out of phase with the bias



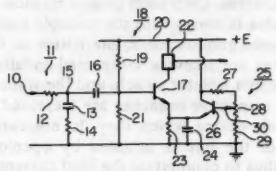
signal applied to the other transistor of the same modulator and is 90° out of phase with the bias signal applied to either of the transistors in the other modulator. A transistor bridge input circuit is provided which permits the value of the circuit input to be a known voltage multiplied by the number of degrees of phase shift desired.

3,670,182

HIGH-SPEED PULSE DELAYING CIRCUIT

Tsuyoshi Konno; Katsuo Nakazato, and Satoshi Ise, all of Kodoma, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Sept. 17, 1970, Ser. No. 72,981
Claims priority, application Japan, Sept. 17, 1969, 44/75037
Int. Cl. H03k 17/26
U.S. Cl. 307—293 2 Claims

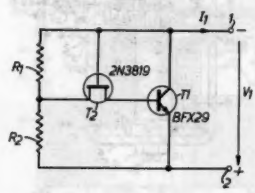


This specification discloses a high-speed pulse delaying circuit having its extremely slight minimal delay and adapted for use as a time-base circuit for a wideband oscilloscope. The pulse delay circuit comprises essentially an integrator consisting of a resistor, a capacitor and a grounded resistor connected to the capacitor in series and a high-speed pulse generator using an avalanche transistor. The grounded resistor has such a low resistance that the waveform of the integrator output resulting from the integration of a rectangular input pulse has a sharp rising portion at a position corresponding to the leading edge of the rectangular pulse, thereby to reduce the minimal delay time. Provision of a voltage adjustment circuit is made for varying the emitter potential of the avalanche transistor to vary the delay time.

3,670,183
TWO-TERMINAL NEGATIVE RESISTANCE DEVICE EMPLOYING BIPOLAR-UNIPOLAR TRANSISTOR COMBINATION

David Joseph Ager, Grundisburgh, and Ian William Stanley, Ipswich, both of England, assignors to The Post Office, London, England

Filed Dec. 22, 1970, Ser. No. 100,623
Claims priority, application Great Britain, Jan. 2, 1970, 191/70
Int. Cl. H01c 7/10
U.S. Cl. 307—304 12 Claims

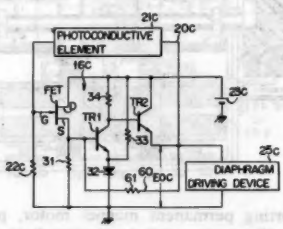


This Specification describes electrical networks having two terminals and exhibiting negative dynamic resistance characteristics achieved by the use of a field effect transistor having its gate electrode connected to one of the terminals and connected in a resistive bias circuit to control the base current of a bipolar transistor having its collector-emitter path connected in a circuit from one to the other of the terminals. Both voltage controlled and current controlled networks are described and examples of the use of negative feedback arrangements to improve network linearity are given.

3,670,184
LIGHT SENSITIVE AMPLIFIER CIRCUIT HAVING IMPROVED FEEDBACK ARRANGEMENT

Gijun Idei, Tokyo, and Saburo Numata, Saitama-ken, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi and Fuji Shashin Kouki Kabushiki Kaisha, Saitama-ken, Japan

Filed Feb. 9, 1971, Ser. No. 113,979
Claims priority, application Japan, Feb. 13, 1970, 45/11970; 45/11971; Feb. 18, 1970, 45/13404
Int. Cl. H03k 3/42; H01j 39/12
U.S. Cl. 307—311 13 Claims

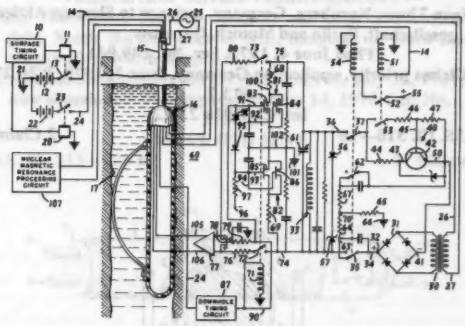


A light sensitive amplifier circuit arrangement for detecting light comprising a source follower field effect transistor having at least one resistor connected to its gate as well as between its source and ground; a second transistor whose base is connected to the field effect transistor, and whose collector is connected to a power source through a resistor; a constant voltage supply element connected between emitter of the second transistor and ground; a photocell connected in a negative feedback loop disposed between the gate of the field effect transistor and the output side of the second transistor; and a load connected to the output side of the second transistor and which driven in response to the variation of the resistance of the photocell due to the intensity of incident light. Further included is a negative feedback transmitting element from the output side of the second transistor to the grounded point of the resistor included in the source circuit of said field effect transistor. The resistor placed between the source of said field effect transistor and the grounded point may be a variable or semifixed type, there may be connected in parallel with the variable resistor a circuit including a first resistor, a heat sensitive resistor element and a second resistor all connected in series, the junction of the first resistor and the heat sensitive resistor element or second resistor is connected to the base of the second transistor. Still further, an additional resistor may be connected between the power source and either or both of the gate of said field effect transistor and the base of the second transistor.

3,670,185
INDUSTRIAL TECHNIQUE

Clifford Vermette, Houston, Tex., assignor to Schlumberger Technology Corporation

Filed Apr. 15, 1970, Ser. No. 28,797
Int. Cl. H03k 17/60
U.S. Cl. 307—304 3 Claims



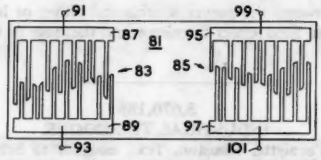
An illustrative embodiment of the invention relates to a circuit for a nuclear magnetic logging tool in which two sets of two parallel connected field effect transistors (FET), are coupled to respective gate voltages that are of equal magnitude and of opposite polarity. During polarization, the FETs are in a low impedance condition to avoid being subjected to large voltages. The method of biasing, together with the parallel connection of the FETs ensures symmetrical voltages with respect to ground across the coil. At the end of polarizing, the coil voltage reverses causing conduction to occur in a Zener diode which is connected across the coil. When the reverse voltage of the coil drops below a predetermined level, the Zener diode stops conducting and the circuit rings at its resonant frequency for a few milliseconds. To further reduce the charge in the circuit, a low value critical damping resistance is applied across the coil through another field effect transistor. After most of the stored charge has been dissipated, both FET sets are switched to a high impedance state in order to apply the formation fluid nuclear magnetic resonance signal to the downhole amplification system input.

3,670,186

PIEZOELECTRIC DEVICE UTILIZING LITHIUM GERMANATE

Maurice Vernon Hobden; George Joseph Rich, and Daniel Stewart Robertson, all of Malvern, England, assignors to National Research Development Corporation

Filed July 19, 1971, Ser. No. 163,826
Claims priority, application Great Britain, July 20, 1970, 35,026/70
Int. Cl. H01v 7/00
U.S. Cl. 310—9.5 5 Claims



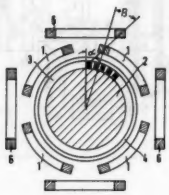
A device using the piezoelectric effect wherein the material in which the piezoelectric effect takes place is lithium germanate, Li_2GeO_3.

3,670,187

IRONLESS DIRECT-CURRENT MACHINE HAVING A NORMAL CONDUCTING ROTOR AND A SUPERCONDUCTING EXCITATION SYSTEM

Egon Thum, Nurnberg, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 4, 1971, Ser. No. 149,941
Claims priority, application Germany, June 5, 1970, P 20 27 673.7
Int. Cl. H02k 23/22
U.S. Cl. 310—10 2 Claims



An ironless direct-current machine with a rotor having a rotor winding of normal conductivity and being equipped with a superconducting excitation system is provided with compensation coils electrically coupled with the rotor and traversed by the rotor current. The superconducting excitation system has super-conducting heteropolar excitation coils disposed between the compensation coils and the rotor winding. The compensation coils are dimensioned, arranged in proximity to the excitation coils and have ampere-turns such that the sum of the torque forces arising from the coaction of the field of the compensation coils with the current flowing through the excitation coils substantially cancels the torque forces arising from the coaction of the rotor winding field with the current flowing through the excitation coils.

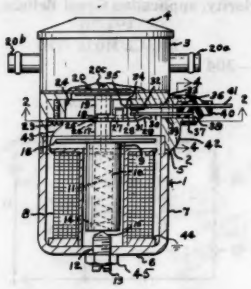
3,670,188

ELECTROMAGNETIC RECIPROCATING MOTOR

Anton Voros, Jr., 15886 Dacosta, Detroit, Mich.

Filed July 16, 1971, Ser. No. 163,257
Int. Cl. H02k 11/00
U.S. Cl. 310—17 8 Claims

An electromagnetically reciprocating motor assembled in a housing, and including an electrical circuit having normally open contacts, and arm mounted in the housing and actuable to close said contacts, a magnetically permeable core, a spring yieldably urging said core in travel to actuate said arm to close said contacts, a solenoid, effective when energized to counter said spring and reverse the travel of said core to open said contacts; said contacts being assembled in and projecting from a plug, the housing having a socket to removably receive said plug to facilitate replacement of worn contacts, and a closure adapted to enclose both plug and socket to resist introduction of moisture and dirt into said housing; one said contact having a flat face, and the other contact having an arcuate face, to effect a rocking, wiping, cleansing action upon closing of the contacts.

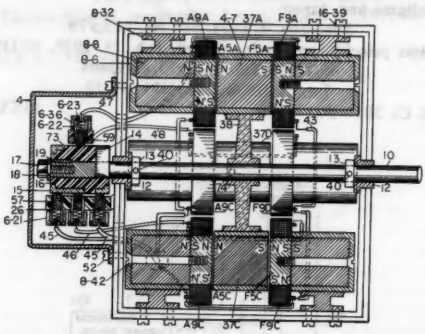


3,670,189

GATED PERMANENT MAGNET MOTOR

Paul Peter Monroe, 109 East San Antonio Drive, Long Beach, Calif.

Filed Apr. 30, 1971, Ser. No. 138,891
Int. Cl. H02k 23/04
U.S. Cl. 310—46 6 Claims

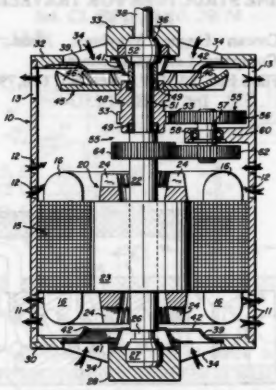


A self-starting permanent magnet motor, particularly a type which will operate on batteries, or alternate half cycle current, consisting of a fore and aft stator assembly. Both fore and aft stator assemblies embody an identical number of permanent magnets of preferred ceramic material and high permeability soft iron inductors, combined into hybrid magnetic poles. A multi-pole permanent magnet rotor, having permanently fixed north and south poles is sandwiched between the fore and aft stator assemblies on a rotatable shaft. The rotor is caused to rotate, due to a gating action which alternates the poles one complete cycle with each transverse passing of the rotor poles between the stator poles. Because of this action, fifty per cent of the energy required to do a specific amount of work is derived from the peak energy product of the permanent magnets.

3,670,190
ELECTRIC MOTOR AND HIGHER SPEED FAN ASSEMBLY

Robert W. Goebel, Springfield, Ohio, assignor to Robbins & Myers, Inc., Springfield, Ohio

Filed Mar. 11, 1971, Ser. No. 123,354
Int. Cl. H02k 9/06
U.S. Cl. 310—60 6 Claims

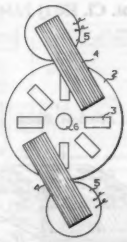


A stator and a rotor of an electric motor are enclosed within a housing which also encloses a fan mounted for rotation with respect to the rotor shaft. The housing also encloses a transmission unit which connects the fan to the rotor shaft for rotation of the fan at a speed substantially higher than that of the rotor shaft. Preferably, the transmission unit incorporates a stub shaft which is supported for rotation in parallel spaced relationship to the rotor shaft and is connected to the rotor shaft and the fan hub by corresponding sets of drive wheels.

3,670,191
SINGLE-PHASE MOTORS

Max Alth, 6 Tamarack Road, Port Chester, N.Y.

Filed Jan. 11, 1971, Ser. No. 105,381
Int. Cl. H02k 19/14
U.S. Cl. 310—163 10 Claims



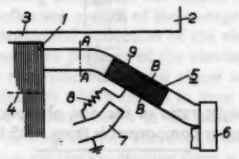
Rotor comprises a conductive disc pierced by a plurality of iron cores spaced a distance from edge of disc and equidistant from each other. Stator comprises a plurality of U-shaped solenoids positioned about rotor, with disc approximately centered within the U-shape. Flux is propagated in lines parallel to rotor shaft and in a series of relatively narrow bands tangential to disc radius.

Alternately, flux lines parallel to rotor shaft, perpendicular to rotor and directed in relatively narrow bands at an angle tangential to to rotor disc circumference are generated by means of a single coil set within a circular iron pole piece having a U-shaped cross section with slots cut into legs of the U, which is directed inward and positioned above and below the rotor.

3,670,192
ROTATING ELECTRICAL MACHINE WITH MEANS FOR PREVENTING DISCHARGE FROM COIL ENDS

Anders R. Andersson, and Lars-Goran Virsberg, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Oct. 22, 1970, Ser. No. 82,955
Claims priority, application Sweden, Oct. 29, 1969, 14763/69
Int. Cl. H02h 7/085
U.S. Cl. 310—196 5 Claims

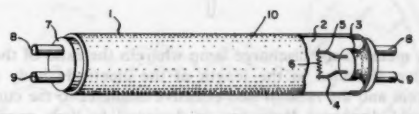


In order to prevent glow discharge from coil ends of a rotating electrical machine to adjacent grounded machine parts, the coil end is provided on the outside of its insulation with a conducting layer which is connected to ground by a voltage dependent impedance, such as a resistance, whose impedance decreases as the voltage increases.

3,670,193
ELECTRIC LAMPS PRODUCING ENERGY IN THE VISIBLE AND ULTRA-VIOLET RANGES

Luke Thorington, Berkeley Heights, and Louis J. Parascandola, North Bergen, both of N.J., assignors to Duro-Test Corporation, North Bergen, N.J.

Continuation of application Ser. No. 654,148, July 18, 1967, now abandoned. This application May 14, 1970, Ser. No. 37,433
Int. Cl. H01j 61/44
U.S. Cl. 313—108 R 17 Claims



Electric lamps having spectral radiation characteristics approximating natural daylight with a controlled amount of energy in the near and middle ultraviolet ranges which also produce light of sufficient intensity and proper color to make them usable as general illuminants.

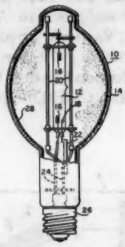
3,670,194
COLOR-CORRECTED HIGH-PRESSURE MERCURY-VAPOR LAMP

William A. Thornton, Jr., Cranford, and Melvin C. Unglert, Wyckoff, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 26, 1971, Ser. No. 109,802
Int. Cl. H01j 61/44, 61/48
U.S. Cl. 313—109 9 Claims

Color-corrected high-pressure mercury-vapor lamp provides good color rendition of illuminated objects, and especially good color rendition of flesh tones. The lamp utilizes a particular phosphor coating principally comprising a two-component blend. One of the phosphor blend components provides an emission in the shorter wavelength region of the visible spectrum peaking at from 440 nm to 470 nm, and an example of this component is a strontium chlorophosphate having an apatite structure and activated by a divalent europium. The other phosphor component provides an emission in the longer wavelength region of the visible spectrum peaking at from 605 nm to 630 nm, and an example of this

phosphor component is yttrium phosphate-vanadate activated by tervalent europium. For the foregoing examples,



the relative weight ratio of the one phosphor component to the other phosphor component is from 0.05:1 to 0.4:1.

3,670,195

METAL VAPOUR DISCHARGE LAMP

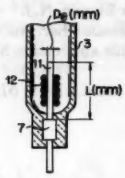
Takeo Kamegaya, Tokyo; Yutaka Imahori, Kawasaki; Akira Ohta, Sagamihara; Tadao Kanoh, Fujisawa, and Akio Ohara, Yokosuka, all of Japan, assignors to Nippon Hoso Kyokai, Tokyo and Tokyo Shibaura Electric Co. Ltd., Kawasaki-shi, Japan

Filed Mar. 17, 1971, Ser. No. 125,321

Claims priority, application Japan, Mar. 20, 1970, 45/23097; Mar. 27, 1970, 45/25379

Int. Cl. H01j *17/06*

U.S. Cl. 313—217 **9 Claims**



A metal vapor discharge lamp wherein the ratio of the effective diameter to the length of the electrode body used therein and the ratio of said effective diameter to the current of said discharge lamp are so designed to have specified values.

3,670,196

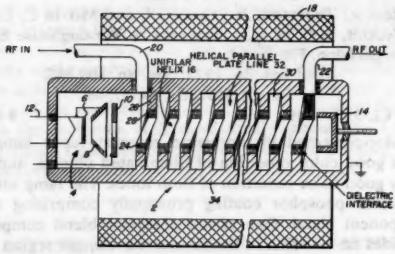
HELIX DELAY LINE FOR TRAVELING WAVE DEVICES

Burton H. Smith, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Feb. 24, 1971, Ser. No. 118,256

Int. Cl. H01j *25/34*

U.S. Cl. 315—3.5 **13 Claims**



A helix type wave propagating delay line structure for high power broadband traveling wave devices is disclosed having a parallel plate transmission line support arrangement with a dielectric interface. Improved thermal energy dissipation is provided with a minimum of disruption of the electrical circuit parameters necessary for electron beam-RF wave interaction. The phase velocity characteristics of the parallel plate support and helix delay line structures are substantially similar.

3,670,197

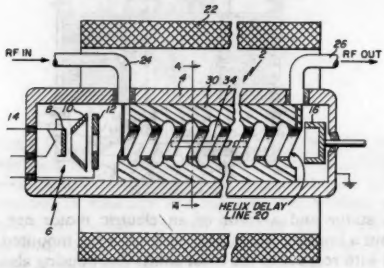
DELAY LINE STRUCTURE FOR TRAVELING WAVE DEVICES

Robert McCowan Unger, Wayland, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Feb. 25, 1971, Ser. No. 118,791

Int. Cl. H01j *25/34*

U.S. Cl. 315—3.5 **4 Claims**



An RF wave periodic delay line is disclosed having thermal energy dissipation and support structure of an insulating material with reduced "dielectric loading" between adjacent elements. For devices requiring internal attenuation to prevent undesired oscillations the appropriate attenuator structure is mounted independently of the dissipation and support structure.

3,670,198

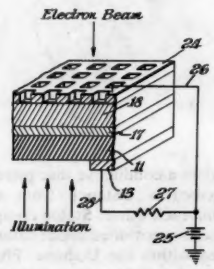
SOLID-STATE VIDICON STRUCTURE

Krut Lehovec; Frank H. Hielscher, both of Williamstown, Mass., and Horst M. Preier, Vienna, Austria, assignors to Sprague Electric Company, North Adams, Mass.

Filed Sept. 30, 1969, Ser. No. 862,338

Int. Cl. H01j *31/48*

U.S. Cl. 315—11 **21 Claims**



A charge storage vidicon camera structure is provided by covering a thin semiconductor wafer with a semi-insulating layer. A spacial optical pattern is projected onto this photoelectrically active material and transformed into a time sequence of electrical codes which can be subsequently reconverted into an optical image.

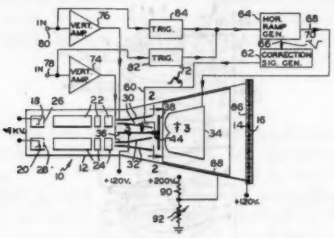
3,670,199
CATHODE RAY TUBE HAVING AUXILIARY DEFLECTION PLATE TO CORRECT PINCUSHION DISTORTION

James D. Hawes, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation of application Ser. No. 845,740, July 28, 1969, now abandoned. This application Apr. 6, 1970, Ser. No. 23,097

Int. Cl. H01j 29/50, 29/74

U.S. Cl. 315—13 R 12 Claims



A cathode ray tube having two electron beams and associated deflection systems is described in which an auxiliary deflection plate is employed between two pairs of vertical deflection plates at their outputs to correct pincushion distortion. A correction signal is produced by a control circuit and applied to the auxiliary deflection plate in response to a ramp voltage input corresponding to the horizontal sweep signal. The correction signal is a positive going peak shaped voltage so that the auxiliary deflection plate tends to vertically deflect the beams away from such plate at both the start and end of the horizontal sweep signal to correct pincushion distortion while not deflecting such beam appreciatively at the center of such sweep signal.

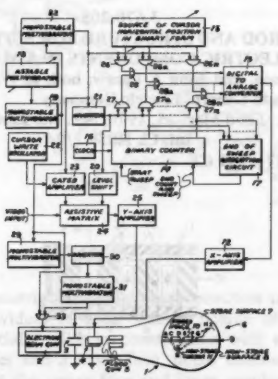
3,670,200
NON-STORE CURSOR WRITING ON A STORAGE TUBE

Francis L. Fielding, Montclair, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Nov. 3, 1970, Ser. No. 86,497

Int. Cl. H01j 43/30

U.S. Cl. 315—12 8 Claims



This technique employs a split-screen storage tube wherein the top half of the viewing screen stores the video signal being viewed, and the bottom half, having a non-store characteristic, is used for the cursor. In order that the same deflection system can be used for both the viewed signal and the cursors, the writing of the viewed signal and the cursor is performed by time sharing the writing electron beam, there being no interference with the stored trace because of the small time spent in writing the cursor. The sweep voltage for the viewed signal is produced by a binary counter driven by a clock. The horizontal position of the cursor is presented in binary form. An astable multivibrator determines the frequency of writing the cursor and drives a monostable multivibrator that determines the duration of the cursor. The output signal of the monostable multivibrator and its complement control logic circuitry that couples the sweep voltage in binary form or the cursor horizontal position in binary form to a digital to analog convertor, the output of which drives the horizontal deflection system of the storage tube, resulting in time shared horizontal deflection of the electron beam in the store and non-store portions of the viewing screen. Also, the monostable multivibrator output signal and its complement controls circuitry which results in time shared vertical deflection of the electron beam in the store and non-store portions of the viewing screen. The cursor is vertically written by a sine wave oscillation starting from a predetermined vertical position in the non-stored portion of the viewing screen. In addition, the astable multivibrator output controls the writing electron gun to blank the electron beam during its deflections between the viewed signal and the cursor and vice-versa.

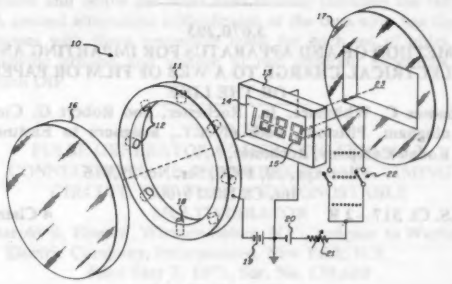
3,670,201
GAS DISCHARGE DISPLAY DEVICE WITH PERIMETRICAL CATHODE

Harry Veron, Framingham, Mass., assignor to Sperry Rand Corporation

Filed July 10, 1970, Ser. No. 52,761

Int. Cl. H05b 37/00

U.S. Cl. 315—169 TV 6 Claims



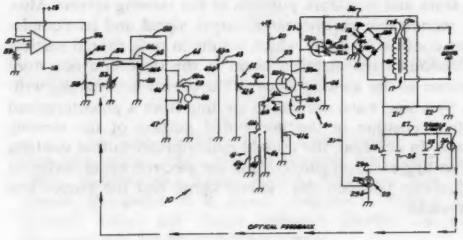
A display device employing a planar array of elements disposed on a dielectric substrate. The dielectric substrate is affixed to a metallic plate which functions as an anode element in an electrical discharge while a perimetrical metallic strip serves as a cathode element. These components are disposed between two non-conductive plates in which a partial vacuum is created and backfilled with an inert gas. The non-conductive plate proximate the display surface of the array of elements is transparent enabling an undistorted view of the segments. A relatively large potential applied between the anode and the cathode elements sustains the electrical discharge thereby providing a source of free electrons in the area between the elements and the transparent plate. The application of a small bias voltage between selected segments of the array of elements and the anode element produces a thin luminous sheath over the energized segments which provides a sharply defined display.

3,670,202

ULTRASTABLE CALIBRATED LIGHT SOURCE

Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Michael F. Heidt, 3530 Nasa Road 1, Apt. 40, Seabrook, Tex.; John E. Novotny, 3904 Arlington Square Drive 021, and Naranappa K. Shankar, 702 Gilpin Street, both of Houston, Tex.

Filed July 31, 1970, Ser. No. 59,956
Int. Cl. H05b *37/02*
U.S. Cl. 315—297 7 Claims



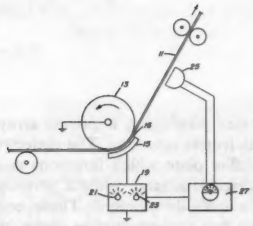
Light from an electrically powered light source is optically monitored by a transducer which converts the optical signal to an electrical error signal. The error signal is compared with a reference signal and a signal representing the difference between the reference and the error signals is generated. The difference signal is employed to control an electronic switching network which in turn regulates the electrical power input to the light source to maintain a constant light level at the optical monitor.

3,670,203

METHOD OF AND APPARATUS FOR IMPARTING AN ELECTRICAL CHARGE TO A WEB OF FILM OR PAPER OR THE LIKE

Thomas C. Whitmore, Jr., Rochester, and Robert G. Cunningham, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 20, 1970, Ser. No. 29,816
Int. Cl. H05f *3/00*
U.S. Cl. 317—2 R 4 Claims



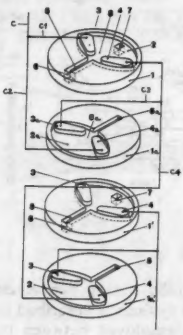
An electrical charge is applied to a moving web of flexible material such as film or paper by transporting the web over a grounded roller while maintaining a stationary electrically charged plate adjacent to the web but spaced slightly therefrom. A direct current voltage of the required sign and magnitude is applied to the plate from any suitable source such as a generator or battery. Alternatively the plate can be grounded and the voltage applied to the roller.

3,670,204

SPARK GAP SYSTEM FOR MAGNETICALLY QUENCHED SURGE VOLTAGE ARRESTER

Robert Greuter, Zurich, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed July 6, 1971, Ser. No. 159,688
Claims priority, application Switzerland, July 23, 1970, 11161/70
Int. Cl. H02h *9/06*
U.S. Cl. 317—61.5 2 Claims



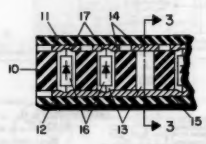
A spark gap system for a surge voltage arrester of the magnetically quenched type is composed of a stack of superposed plates each of which is provided with a recess which defines an arc chamber and a pair of spaced electrodes therein and between which an arc can be struck and lengthened by the magnetic field. The pairs of electrodes in adjacent arc chambers are electrically connected in parallel, and an arrangement of ducts which provide an inter-communication between adjacent chambers permit the ionized gas formed by an arc in either chamber after being lengthened to pass to the other chamber to assist in striking an arc in the latter chamber as the arc in the first-mentioned chamber is extinguished. The arc is thus enabled to be transferred back and forth between adjacent arc chambers until the current has been reduced to such an extent that no further arc can be sustained.

3,670,205

METHOD AND STRUCTURE FOR SUPPORTING ELECTRIC COMPONENTS IN A MATRIX

Corbin Dixon, and John J. Larew, both of Waynesboro, Va., assignors to General Electric Company

Filed Mar. 25, 1970, Ser. No. 22,495
Int. Cl. H05k *1/04*
U.S. Cl. 317—101 CE 6 Claims

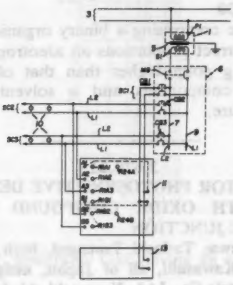


Electric components are held at selected positions of a matrix defined by a plurality of rows and columns. An upper plate containing rows of conductors and a lower plate containing columns of conductors sandwich the components and complete a matrix structure wherein the components are securely held and are in good electrical contact with external circuitry.

3,670,206
PROTECTION AGAINST ELECTRICAL SHOCK

Richard Cumming Sircom, Windsor, Nova Scotia, Canada, assignor to Eastech Limited

Filed Apr. 12, 1971, Ser. No. 133,158
Claims priority, application Canada, Oct. 6, 1970, 094,882
Int. Cl. H02h *3/28*
U.S. Cl. 317—18 D 21 Claims



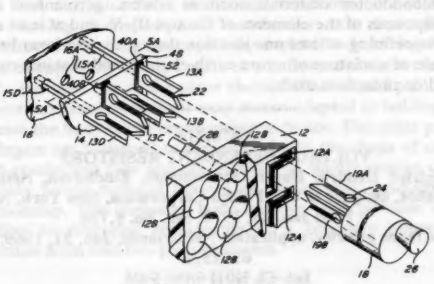
To reduce the danger of electrical shock in two-wire non-grounded electrical systems, the leakage current from line L1 to ground is balanced by an injected current from ground to line L1, and similarly the leakage current from line L2 to ground is balanced by an injected current from ground to line L2.

In this way, the leakage current from line L1 to ground cannot pass through a human body from ground to L2, since the leakage current form a closed current loop.

3,670,207
MODULAR MATRIX WITH PLUG INTERCONNECTION

William A. Seabury, III, Highland Road, Ulster Park, N.Y.

Filed Sept. 25, 1970, Ser. No. 75,408
Int. Cl. H05k *1/04*
U.S. Cl. 317—101 DH 7 Claims

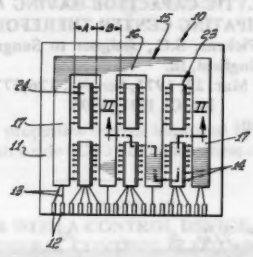


A modular matrix with plug interconnection including at least two individual modular matrix boards of insulating material essentially alike in construction with each board having an upper and a lower face, upper conductive members secured to the upper face and lower conductive members secured to the lower face, detachable contacts secured to the boards, certain of the contacts being electrically united to the upper conductive members and certain of the contacts being electrically united to the lower conductive members, certain of the contacts having wire wrap tails extending beyond the boards with the wire wrap tails of individual boards being electrically united together whereby a series of individual boards may be wired together to produce the equivalent of a large matrix.

3,670,208
MICROELECTRONIC PACKAGE, BUSS STRIP AND PRINTED CIRCUIT BASE ASSEMBLY

Vram E. Hovnanian, Sherman Oaks, and Edward Kitzmiller, Manhattan Beach, both of Calif., assignors to Logic Dynamics, Inc., El Segundo, Calif.

Filed July 13, 1970, Ser. No. 54,325
Int. Cl. H05k *1/04*
U.S. Cl. 317—101 CM 6 Claims

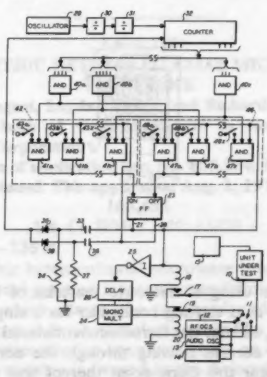


A space-saving assembly including a printed circuit card with aligned sets of wire lead mounting terminals such as holes therethrough arranged in modularly spaced parallel rows, a strip including ground and voltage supply busses separated by insulation, located on the card between the holes of each of the aligned sets with a wire lead from each strip extending into respective diagonally opposite holes of each set, and Dual-In-Line Packages (DIP) located over the buss strip with the package wire leads extending into the respective holes of the respective set to be soldered to respective printed leads on the card, with the buss strip under the DIPs acting as the heat sink for the DIPs. An alternative embodiment of the buss strip has one of the conductive busses formed in a U-shaped section providing buss elements above and below the other buss thereby shielding the latter. A second alternative embodiment of the buss strip has three busses with three respective leads for each set of holes to provide ground and voltage at two different potentials to each DIP.

3,670,209
PULSE GENERATOR COMPRISING SERIALLY CONNECTED MAKE AND BREAK RELAYS, TIMING CIRCUIT, FLIP-FLOP AND MONOSTABLE MULTIVIBRATOR

Harold R. Hensen, Winston-Salem, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed May 3, 1971, Ser. No. 139,680
Int. Cl. H01h *47/00*
U.S. Cl. 317—135 R 6 Claims



Pulse signals are produced by serially connected make and break contacts of respective relays. A timing circuit turns a

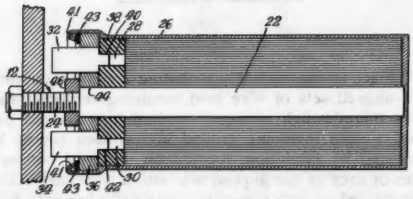
flip-flop on and off to correspond to the beginning and end of a pulse. When the flip-flop is turned on, the make contacts are closed to initiate a pulse and when the flip-flop is turned off, a monostable multivibrator causes the break contacts to open and end the pulse. The timing circuit includes an on selecting circuit and an off selecting circuit which operates independently of each other.

3,670,210

ELECTROLYTIC CAPACITOR HAVING A HEAT DISSIPATING CENTER THEREFOR

Emil F. Blase, Pickens, S.C., assignor to Sangamo Electric Company, Springfield, Ill.

Filed Mar. 22, 1971, Ser. No. 126,577
Int. Cl. H01g 9/00
U.S. Cl. 317—230 **10 Claims**



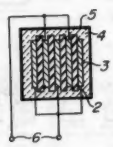
An electrolytic capacitor designed to reduce its internal operating temperatures by incorporating an elongated solid metal arbor into the center of the circular convolute winding. By placing the arbor into thermal contact with the capacitor container and/or an external metallic member, the arbor functions as a heat sink to reduce the operating internal temperature of the capacitor.

3,670,211

SWITCHING CONDENSER ELEMENT FOR SWITCHING AN ALTERNATING CURRENT

Akio Kumada, Kodaira; Kenkichi Suzuki, Hachioji, and Kenichi Kitta, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 21, 1970, Ser. No. 65,995
Claims priority, application Japan, Aug. 29, 1969, 44/68843
Int. Cl. H01g 9/00
U.S. Cl. 317—230 **9 Claims**



A condenser using a dielectric material of $Pb(Zr\text{-}Ti)O_3$ system is used as a starting condenser for a single phase induction motor, so that the ferroelectric material is heated by an alternating current flowing through the condenser to a temperature near the Curie-point thereof and that the impedance of the condenser changes considerably.

3,670,212

CAPACITOR WITH AZEOTROPIC ELECTROLYTE FOR WIDE TEMPERATURE RANGE OPERATION

Daniel J. Anderson, Indianapolis, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Continuation-in-part of application Ser. No. 648,251, June 23, 1967, now abandoned. This application July 9, 1969, Ser. No. 840,504
Int. Cl. H01g 9/00
U.S. Cl. 317—230 **10 Claims**

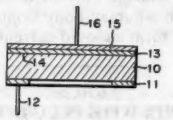
An electrolyte comprising a binary organic system which forms in the correct proportions an azeotropic composition having a boiling point higher than that of either of the system's pure components and a solvent inert to the azeotropic mixture.

3,670,213

SEMICONDUCTOR PHOTOSENSITIVE DEVICE WITH A RARE EARTH OXIDE COMPOUND FORMING A RECTIFYING JUNCTION

Takashi Nakagawa; Tadashi Tsutsumi, both of Tokyo, and Hiroo Hori, Kawasaki, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed May 21, 1970, Ser. No. 39,381
Claims priority, application Japan, May 24, 1969, 44/39883; June 17, 1969, 44/47325
Int. Cl. H01l 15/00
U.S. Cl. 317—234 R **7 Claims**



A semiconductor device comprising a substrate made of semiconductor materials such as silicon, germanium and compounds of the elements of Groups III–V, and at least one layer defining at least one junction therewith, said layer being made of a mixture of a rare earth element and titanium oxide and/or zirconium oxide.

3,670,214

VOLTAGE-DEPENDENT RESISTORS

Siegfried Hendrik Hagen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 26, 1970, Ser. No. 5,738
Claims priority, application Netherlands, Jan. 31, 1969, 6901538
Int. Cl. H01l 9/00, 9/06
U.S. Cl. 317—234 R **2 Claims**

Voltage-dependent resistor comprising a foil of insulating material in which semiconductor grains are embedded, which project from the foil on both sides and are in contact with

electrode layers applied to both sides of the foil, the grains having a diameter of not more than 150 μ and consist of a

III–V compound, preferably GaP having an energy gap of at least 1.1 eV.

3,670,215

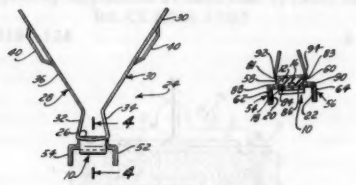
HEAT DISSIPATOR FOR INTEGRATED CIRCUIT

Seymour Wilkens, Wantagh, and Edmund G. Trunk, East Meadow, both of N.Y., assignors to The Staver Company, Incorporated, Bay Shore, L.I., N.Y.

Filed Sept. 28, 1970, Ser. No. 76,035

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 317—234 R **24 Claims**



A heat dissipator for a semiconductor component of the type having L-shaped heat conductive tabs extending therefrom comprising a stamped sheet metal body having two pairs of oppositely facing fingers struck from said sheet metal body and bent out of the plane thereof. One of said pairs of fingers functions as resilient snap means adapted to holdingly receive the body of the semiconductor device. The other pair of fingers are L-shaped to correspond with the shape of said heat conductive tabs and are adapted to snugly engage oppositely facing surfaces thereof in planar heat conductive relationship. The dissipator body has two wing portions extending in diverging relationship in a generally opposite direction from said two pairs of fingers.

3,670,216

VOLTAGE VARIABLE RESISTORS

Takeshi Masuyama, Osaka; Toshioki Amemiya, Tokyo, and Yoshio Iida, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

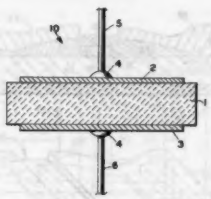
Filed Feb. 12, 1970, Ser. No. 10,959

Claims priority, application Japan, Feb. 24, 1969, 44/14792; Mar. 7, 1969, 44/18238; Aug. 15, 1969, 44/65498; 44/65500; 44/65501; 44/65502

Int. Cl. H01e *3/22*

U.S. Cl. 317—238 **8 Claims**

A voltage variable resistor comprising a sintered wafer consisting essentially of zinc oxide (ZnO) and, as an additive, lanthanum oxide (La_2O_3) and/or yttrium oxide (Y_2O_3) and two electrodes applied to opposite surfaces of said sintered wafer, at least one of said two electrodes being a silver paint electrode. The voltage variable resistor modified with lanthanum oxide (La_2O_3) and/or yttrium oxide (Y_2O_3) has



the electrical properties thereof improved by the further addition of cobalt oxide (CoO) and manganese oxide (MnO).

3,670,217

THYRISTOR WITH A CONTROL DEVICE AND HAVING SEVERAL CONTROL ELECTRODES

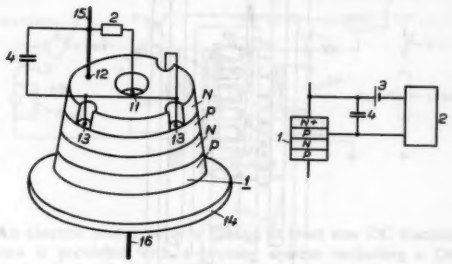
Carl Ingvar Boksjo, and Bengt Allan Sehman, both of Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Continuation of application Ser. No. 712,770, Mar. 13, 1968, now abandoned. This application Aug. 14, 1970, Ser. No. 63,911

Claims priority, application Sweden, Mar. 16, 1967, 3639/67

Int. Cl. H01l *11/00, 15/00*

U.S. Cl. 317—235 R **3 Claims**



A thyristor has a control device connected between a base layer and an emitter layer. The base layer is provided with a plurality of connecting electrodes one at the center and several around the periphery. A control device is connected to the central electrode while a capacitor is connected between the emitter electrode and the peripheral electrodes.

3,670,218

MONOLITHIC HETEROEPITAXIAL MICROWAVE TUNNEL DIE

Rudolf R. August, Laguna Beach, and Richard L. Palmquist, Anaheim, both of Calif., assignors to North American Rockwell Corporation

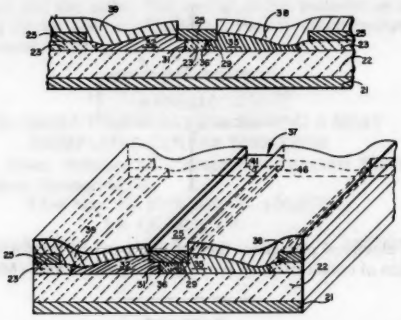
Continuation of application Ser. No. 805,304, Mar. 7, 1969, now abandoned. This application Aug. 2, 1971, Ser. No. 168,452

Int. Cl. H01l *11/00, 15/00*

U.S. Cl. 317—235 R **15 Claims**

A monolithic heteroepitaxial microwave tunnel diode with a vertical tunnel junction is manufactured from an insulating substrate on which a layer of p-type semiconductor material has been grown. A layer of dielectric thin film is placed over the p-type semiconductor layer and where an ohmic contact is desired an opening is formed in the dielectric thin film. A circuit metal is then alloyed to the p-type semiconductor

material. A similar opening is formed where a tunnel junction is desired and a second metal is alloyed to the p-type



semiconductor material. An n-type semiconductor region is formed during the second alloying.

3,670,219

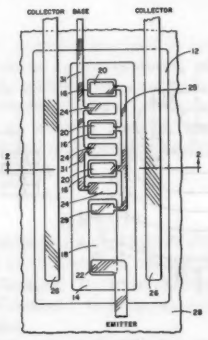
CURRENT LIMITING TRANSISTOR

Thomas M. Frederiksen, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 7, 1970, Ser. No. 95,760

Int. Cl. H01l *19/00*

U.S. Cl. 317—235 R **4 Claims**



A transistor which may be fabricated on a chip is disclosed whose beta remains at about a constant value with collector current up to a desired percentage above the maximum rated load value thereof and then falls off very rapidly, whereby the collector current never exceeds a desired value. This is accomplished by providing a resistor using the emitter diffusion, within the base region of the transistor and then passing all of the emitter current through this resistor. At a designable value of current flow, transistor action is locally, enhanced at the remote end of this emitter resistor and the current gain of the transistor is thereby degraded as high level injection conditions are artifically established in this localized region.

3,670,220

PN JUNCTIONS IN ZNSE, ZNS, OR ZNS/ZNSE AND SEMICONDUCTOR DEVICES COMPRISING SUCH JUNCTIONS

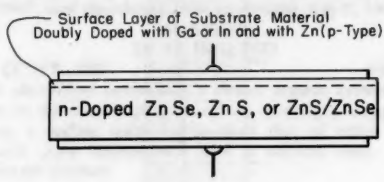
Zoltan K. Kun, Skokie, and Robert J. Robinson, Park Ridge, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Feb. 26, 1971, Ser. No. 119,240

Int. Cl. H01l *7/62*

U.S. Cl. 317—237 **27 Claims**

PN-junctions are formed in a wide band gap zinc chalcogenide (i.e., zinc selenide, zinc sulfide or a zinc sulfo-selenide by pre-doping a surface layer of an N-doped zinc chalcogenide substrate by in-diffusion of a Group III metal to condition it for conversion to P-type conductivity, and converting the pre-doped surface layer to P-type conductivity by doping



it with zinc. The pre-doping and conversion steps may be conducted either simultaneously or sequentially. Well defined PN-junctions are produced, with majority carrier concentrations on the P-conductivity side of the junction of at least 10^{16} to 10^{17} holes per cubic centimeter.

3,670,221

VOLTAGE VARIABLE RESISTORS

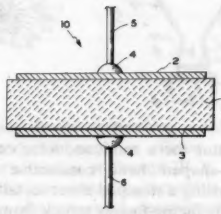
Kazuo Hamamoto; Michio Matsuoka, and Takeshi Masuyama, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed Nov. 28, 1969, Ser. No. 880,758

Claims priority, application Japan, Dec. 2, 1968, 43/88824; 43/88825; Dec. 3, 1968, 43/88861; 43/88862

Int. Cl. H01l *3/22*

U.S. Cl. 317—238 **7 Claims**



Voltage variable resistors comprising a sintered wafer consisting essentially of zinc oxide (ZnO), 0.05 to 8.0 mole percent of bismuth oxide (Bi_2O_3) and 0.05 to 10.0 mole percent of at least one member selected from the group consisting of niobium oxide (Nb_2O_5), zirconium oxide (ZrO_2), vanadium oxide (V_2O_5) and tungusten oxide (WO_3) and two electrodes applied to opposite surfaces of said sintered wafer, at least one of said two electrodes being a silver paint electrode.

3,670,222

HIGH VOLTAGE CERAMIC CAPACITOR ASSEMBLY

Roy Nakata, Bryn Mawr, and John A. Oppel, Aldan, both of Pa., assignors to General Electric Company

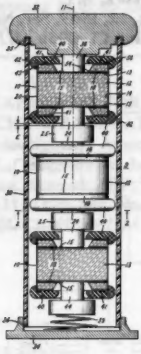
Filed June 28, 1971, Ser. No. 157,265

Int. Cl. H01g *1/13*

U.S. Cl. 317—261 **8 Claims**

A ceramic capacitor assembly for high voltages comprising a plurality of ceramic capacitor blocks disposed in stacked relation within a tubular insulating housing. A spacer ring of insulating material is associated with each block for maintaining the peripheries of the blocks radially spaced from the insulating housing by a predetermined minimum amount sufficient to effectively prevent ionization in the gaps between the peripheries of the blocks and the tubular housing. Each spacer ring is anchored to its associated ceramic block in

such a manner that all portions of the spacer ring that are disposed radially outward of the periphery of the ceramic



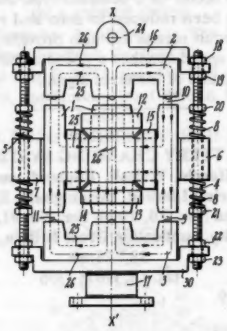
block are located in a position axially spaced from each ceramic block.

3,670,223

METHOD AND APPARATUS FOR PRODUCING VIBRATIONS OR IMPULSES

Henri Louis Etienne Pommeret, 37 Boulevard Suchet, Paris, France

Filed Mar. 5, 1971, Ser. No. 121,506
Claims priority, application France, Mar. 6, 1970, 121506
Int. Cl. H02k *33/08*
U.S. Cl. 318—124 **6 Claims**



This device for producing vibrations, oscillations or impulses to be converted if necessary into unidirectional impulses or into linear movements comprises a reversible magnetic yoke and core assembly for either driving piles, sheet piles or the like, or generating alternating current, or for measuring vibration and the like.

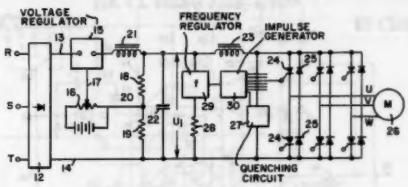
3,670,224

SPEED AND VOLTAGE CONTROL MEANS FOR AN ALTERNATING-CURRENT MOTOR, PARTICULARLY A POLYPHASE INDUCTION MOTOR

Arne Jensen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Continuation of application Ser. No. 806,655, Mar. 12, 1969, now abandoned. This application Feb. 18, 1971, Ser. No. 116,657
Int. Cl. H02p *5/40*
U.S. Cl. 318—227 **2 Claims**

The invention relates to a speed and voltage control system for an alternating current motor such as a polyphase induction motor. The system includes voltage and frequency regulators and an inverter. In order to avoid the damaging effects of reverse currents and excessive voltages due to hyper-



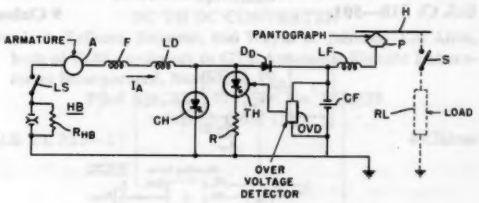
synchronous speed operation upon reducing motor speed, the direct current voltage is made the independent variable with the control frequency being dependent on the actual direct current voltage at the inverter.

3,670,225

SYSTEM FOR BRAKING ELECTRIC MOTOR VEHICLES

Takashi Kitaoka, and Akira Shirashoji, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed June 12, 1970, Ser. No. 45,718
Claims priority, application Japan, June 19, 1969, 44/48600
Int. Cl. H02k *3/14*
U.S. Cl. 318—270 **3 Claims**



An electric motor vehicle having at least one DC traction motor is provided with a braking system including a DC chopper device for controlling the speed of the traction motor, and a voltage detector for detecting the voltage across a capacitor during regenerative braking of the motor vehicle and providing a triggering signal whenever the detected voltage exceeds a predetermined magnitude due to the interruption of a load consuming the regenerative power. The triggering signal is applied to a switching thyristor connected across the chopper device to fire the thyristor thereby preventing a further increase in the capacitor's voltage. Also a high speed current decreasing device having a predetermined time delay is actuated in response to the triggering signal and then an associated line switch is opened to interrupt the circuit.

3,670,226

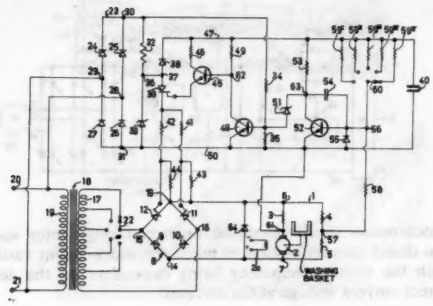
DEVICE FOR THE CONTROLLED ACTUATION OF THE BASKET OF A WASHING MACHINE

Lamberto Mazza, Pordenone, Italy, assignor to Industrie A. Zanussi S.p.A., Pordenone, Italy

Filed May 14, 1970, Ser. No. 37,104
Claims priority, application Italy, May 17, 1969, 16948 A/69
Int. Cl. H02p ; D06f *33/00;* **H02m** *1/08*
U.S. Cl. 318—345 **3 Claims**

A speed governing device for washing machines for overcoming the defect of generating radiofrequency noises without using any filter. In addition, the device exploits the advantages of DC motors in general without suffering from the inconveniences thereof. The arrangement essentially comprises a DC motor fed through a constant current trans-

former and a rectifier having rectifying elements whose opening is controlled by a device which delivers opening pulses synchronized with the zeros of the AC feeding current until



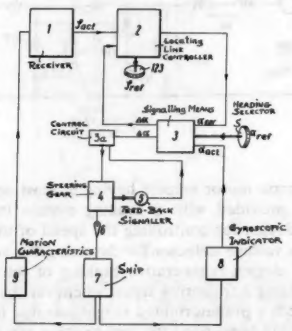
the speed of the motor is below a predetermined value, while the delivery of pulses is discontinued as the predetermined value aforementioned is exceeded.

3,670,227

ELECTRICAL AUTOMATIC PILOT

Walter Kundler, Kiel, and Gerd Hingst, Kiel-Ellerbek, both of Germany, assignors to Anschutz & Co., G.m.b.H., Kiel-Wik, Germany

Filed Oct. 13, 1970, Ser. No. 80,438
Int. Cl. G05d *1/00*; B63h *25/02*
U.S. Cl. 318—581 **9 Claims**



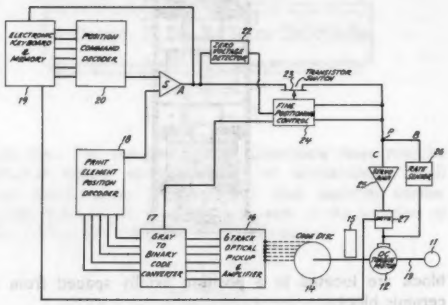
Our invention relates to an automatic pilot for a ship of the type equipped with a gyroscopic compass indicating the true heading of the ship and with a manually adjustable selector set-up in accordance with the selected or desired course. An electrical error signal indicating the difference of the true heading from the selected course controls a trigger circuit which in its turn controls a motor-operable steering gear for actuating the rudder of the ship. As a result, the rudder is so actuated as to keep the error signal to a minimum. For the purpose of our invention a correcting signal is superimposed on the error signal for steering the ship along a track coinciding with a "locating line." This is a line connecting the points in which electro-magnetic waves received from two stationary radio stations have the same phase-angle. The error signal is produced by a PID-network controlled by a radio navigational receiver installed on the ship. As a result, the automatic pilot whose selector has been set up in accordance with the approximate azimuth of the locating line will so steer the ship as to keep the sum of the error signal and the correcting signal to zero. This means, however, that the ship will travel along a track coinciding with the locating line.

3,670,228

DIGITAL FINE-COARSE SERVOMECHANISM FOR A SINGLE ELEMENT PRINTER CONTROL SYSTEM

Donald P. Crosby, Ridgefield, Conn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 12, 1969, Ser. No. 884,744
Int. Cl. G05b *11/18*
U.S. Cl. 318—594 **11 Claims**



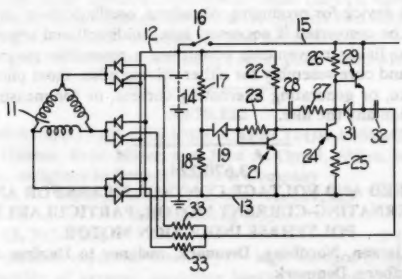
A single element printer selection servomechanism for selectively positioning a spherical printing head to one of a plurality of printing positions arrayed about the printing element. Each printing position comprises a type character disposed within a sector on the surface of the printing element. An error signal representative of the difference between actual and commanded position of the printing element energizes a motor to roughly position the sector of the printing element containing the selected type character. Fine positioning means provide a signal to precisely position the midpoint of the sector of a selected type character after the error signal has been reduced to zero and rough positioning taken place. Circuit means are also provided for braking the motor when its speed reaches a predetermined amount relative to the amplitude of the error signal.

3,670,229

BATTERY CHARGING SYSTEMS

Paul Anthony Harris, Walsall, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Nov. 20, 1970, Ser. No. 91,414
Claims priority, application Great Britain, Dec. 2, 1969, 58,725/69
Int. Cl. H02j *7/06*
U.S. Cl. 320—59 **2 Claims**



A battery charging system of the kind using a permanent magnet alternator with its output controlled by thyristors associated with a full wave rectifier has an oscillator controlled by voltage sensitive means for determining whether or not the thyristors conduct. The oscillator operates through the

intermediary of a capacitor which is charged by the oscillator and discharges through the gate-cathodes of the thyristors, and the discharge path includes a load in the collector circuit of an output transistor in the oscillator. This collector load is bridged by a low resistance path so that the collector load does not reduce the discharge current of the capacitor.

3,670,230

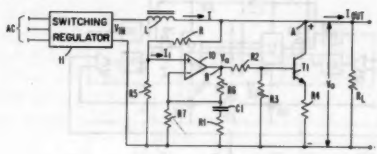
ACTIVE FILTER CAPACITOR FOR POWER SUPPLY SWITCHING REGULATORS

James J. Rooney, Apalachin, and Augustyn Z. Walach, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1970, Ser. No. 100,110

Int. Cl. H02m *1/14*

U.S. Cl. 321—10 **9 Claims**



An active filter capacitor circuit for DC voltage regulation in power supply systems with the active capacitor consisting of an amplifier and a transistor output stage driven by the amplifier.

3,670,231

APPARATUS FOR MONITORING FLOW OF CURRENT IN A CONDUCTOR

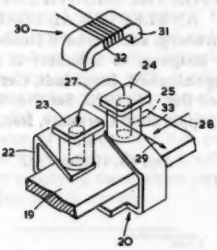
George Albert Farquhar Maddick, c/o The English Electric Company Limited, Stafford, England

Filed Feb. 8, 1971, Ser. No. 113,472

Claims priority, application Great Britain, Feb. 6, 1970, 5,868/70

Int. Cl. H02m ; G08b *21/00;* **H01f** *21/06*

U.S. Cl. 321—12 **7 Claims**



Apparatus for monitoring the flow of recurring pulses of direct current in a conductor. The apparatus includes magnetic means coupled to the conductor for establishing a magnetic field in a known discrete path in response to the recurring pulses and sensing means for generating a signal when a magnetic field is established. The apparatus can be included in a rotatable rectifier system having a plurality of rectifier arms, a magnetic means being coupled to a conductor in each rectifier arm. The magnetic means are disposed in a circular arrangement so that they may generate a signal in a common stationary sensing means as they rotate and pass the sensing means.

3,670,232

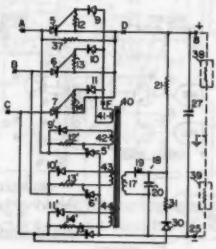
PROTECTED POWER SUPPLY

Charles Theodore, Huntington Beach, Calif., assignor to LTV Ling Altec, Inc., Anaheim, Calif.

Filed Nov. 9, 1970, Ser. No. 87,690

Int. Cl. H02m *1/08, 1/18*

U.S. Cl. 321—14 **12 Claims**



A plural-phase rectifier having triggerable SCRs for rectification, with an oscillator energized from the output of the rectifier for triggering. A diode in each trigger lead with the cathode thereof connected to the trigger of the SCR to prevent inter-SCR triggering when the power supply is short-circuited. Under short-circuit the power supply ceases to operate within a fraction of a cycle of the alternating current being rectified.

3,670,233

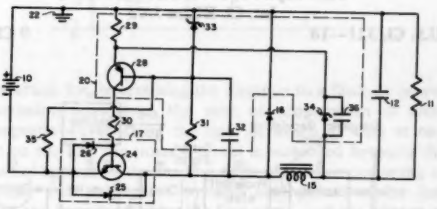
DC TO DC CONVERTER

Neale A. Zellmer, Belmont, and Wayne B. Johnson, Los Altos, both of Calif., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Apr. 12, 1971, Ser. No. 133,035

Int. Cl. G05f *1/56*

U.S. Cl. 323—17 **4 Claims**



A circuit for efficiently converting unregulated direct current voltage into a regulated direct current voltage of lower magnitude across a load in which a capacitor and an inductor are used to store electrical energy with a switch to alternately connect and disconnect the circuit to the unregulated voltage source, the switch being controlled by a circuit in which zener diodes are used to detect variations in regulated voltage and turn the switch "on" or "off" in response to rises and falls in load voltage from a predetermined value.

3,670,234

PULSE WIDTH MODULATED VOLTAGE REGULATOR

James M. Joyce, Huntsville, Ala., assignor to International Business Machines Corporation, Armonk, N.Y.

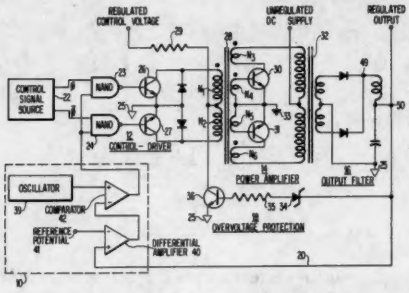
Filed June 30, 1970, Ser. No. 51,052

Int. Cl. H02m *3/32*

U.S. Cl. 321—18 **7 Claims**

A regulated power supply of the driven power inverter type. The widths of the driver pulses are controlled by a

modulation waveform which varies in accordance with variations in the regulated output from the reference potential. The driver transistors are simultaneously turned on during the dwell periods of the modulation waveform to dissipate current in the windings of the interstage transformer and switch off the power transistors. The transformer is a current transformer which includes positive feedback windings on the secondary side. The turns ratio of the positive feedback



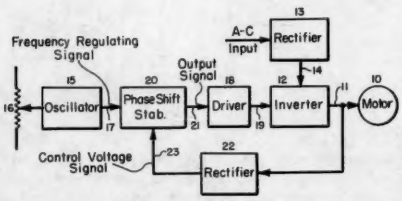
winding and the secondary current winding associated with each power transistor is set equal to the inverse current gain of the transistor to ensure a fixed gain when the transistor is in saturation. A regulated low current voltage is applied to the midpoint of the primary side of the transformer to provide low power switching of the power transistors. A transistor switch connected from the regulator output to the primary side of the transformer removes the driver pulses from the inverter in the event of a component failure.

3,670,235

MOTOR CONTROL SYSTEM WITH COMPENSATION FOR LOW-FREQUENCY VARIATIONS IN MOTOR ENERGIZING VOLTAGE

Benton Bejach, Santa Ana, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Sept. 25, 1970, Ser. No. 75,472
Int. Cl. H02m *1/08*
U.S. Cl. 321—18 **9 Claims**



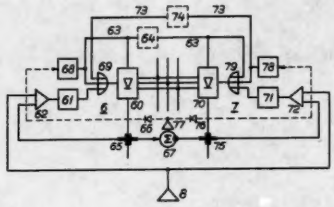
A phase-shift stabilizer is connected in series with an inverter to provide a selective phase-shift of the individual timing pulses passed to the inverter, while maintaining a constant average frequency of these timing pulses. A rectifier circuit in a feedback line from the inverter output side provides a control voltage signal which modifies the phase-shift of each timing pulse in a direction and by an amount appropriate to offset undesired low-frequency fluctuation in the average output voltage from the inverter. The phase-shift stabilizer includes a sawtooth generator for producing a constant amplitude output signal varying in frequency as a function of a frequency regulating signal. A filter is connected to provide a signal which is a function of the undesired low-frequency modulation of the inverter output. A comparator circuit is connected to receive a composite signal formed by mixing the filter output and sawtooth generator signals, and to compare the composite signal against a reference signal. The comparator provides a phase-shifted output signal for controlling the inverter frequency to compensate for the unwanted low-frequency modulation.

3,670,236

CONVERTER STATION HAVING PARALLEL-CONNECTED STATIC CONVERTERS

Ake Ekstrom, Ludvika, Sweden, assignor to Allmanna Svensak Elektriska Aktiebolaget, Vasteras, Sweden

Filed Jan. 25, 1971, Ser. No. 109,433
Claims priority, application Sweden, Jan. 27, 1970, 967
Int. Cl. H02m *7/00*
U.S. Cl. 321—27 R **3 Claims**



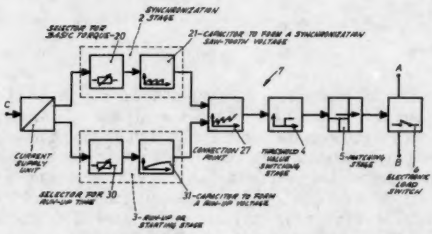
A converter station for high voltage direct current includes two substantially identical parallel converter branches provided with control systems therefore which limit the control angles of the converters of the branches upwards or downwards. A balancing arrangement is provided to assure equal current distribution between the two converter branches when they are forced so far in one direction that the limit value emitter for the converters of one of the converter branches becomes active. The balancing arrangement includes a device responsive to the difference between the current in the two branches to regulate the control system of the converter of the other branch. This arrangement may include cross connections between the limit value emitters to control converters of both converter branches.

3,670,237

APPARATUS FOR THE SMOOTH SWITCHING-ON OF AN ELECTRICAL LOAD

Egon Hubel, Nurnberg, and Gerhard Hoeber, Ingolstadt, both of Germany, assignors to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany

Filed Dec. 16, 1970, Ser. No. 98,839
Claims priority, application Germany, Dec. 23, 1969, P 19 64 376.6
Int. Cl. H02m *7/12*
U.S. Cl. 321—47 **13 Claims**


SYNCHRONIZATION 2 STAGE
SELECTOR FOR BASIC TORQUE-30
21-CAPACITOR TO FORM A SYNCHRONIZATION SAWTOOTH VOLTAGE
CURRENT SUPPLY UNIT
CONNECTION 27 POINT
THRESHOLD VALUE SWITCHING STAGE
SWITCHING STAGE
ELECTRONIC LOAD SWITCH
SELECTOR FOR 30 RUN-UP TIME
31-CAPACITOR TO FORM A RUN-UP VOLTAGE
3-RUN-UP OR STARTING STAGE

In apparatus for the smooth switching-on of an electrical load a supply line transformer feeds a rectifier having its out-

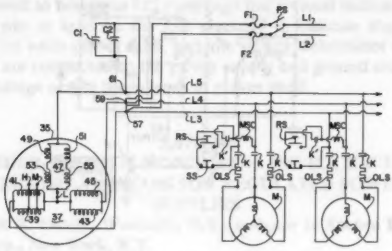
put connected jointly with a synchronization stage and with a run-up or starting stage. Two such stages are connected to the outputs of the respective rectifiers, each of the stages including capacitor means, resistor means and selectors for varying the capacitor means and the resistor means, the capacitor means of the two stages being connected in series at a connection point for supplying a control voltage. A limiting value switch has its input connected with the limiting value switch and with an electrical load for controlling the voltage supplied to such electrical load.

3,670,238

ROTARY DYNAMOELECTRIC MACHINE HAVING HIGH-RESISTANCE ROTOR

Leroy B. Ronk, Nokomis, Ill., assignor to Ronk Electrical Industries, Inc., Nokomis, Ill.

Filed June 16, 1971, Ser. No. 153,567
Int. Cl. H02m *5/00*
U.S. Cl. 321—55 **25 Claims**



A rotary dynamoelectric machine having a generally annular stator including first and second primary windings oriented at 90° electrical phase relationship with respect to one another, the second winding having approximately 0.845 the number of effective turns of the first winding. An induction rotor of the machine has a cylindrical laminated ferromagnetic core positioned within the stator for rotation about a central axis thereof when the stator is energized by an a.c. power source. The rotor is of single-bar squirrel-cage construction having a plurality of electrically conductive bars each extending the length of the core adjacent the cylindrical surface thereof. Conductive end rings at the ends of the rotor electrically are connected to the ends of the bars at the respective ends of the core. The bars and end rings provide a secondary winding and are physically dimensioned such as to provide this secondary winding with a relatively high resistance, viz., at least twice the resistance of a rotor of conventional commercial design. The windings are interconnected with a source of single-phase a.c. power source to permit the machine to be used either as a self-starting rotary phase converter for supplying three-phase power to a load or as a motor having low inrush current.

ERRATUM

For Class 323—17 see:
Patent No. 3,670,233

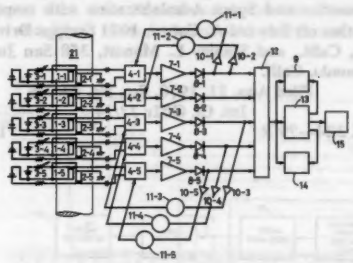
3,670,239

METHOD AND APPARATUS FOR MAGNETIC FLAW DETECTION BY USING MAGNETO-SENSITIVE DIODES

Toshio Shiraiwa, Ikoma, and Tatsuo Hiroshima, Minoo, both of Japan, assignors to Sumitomo Metal Industries Limited, Osaka, Japan

Filed Mar. 19, 1970, Ser. No. 21,062
Int. Cl. G01r *33/12*
U.S. Cl. 324—37 **4 Claims**

This invention relates to method and apparatus for inspecting flaws, herein magneto-sensitive diodes are used so as to provide a remarkably higher detecting sensitivity than of the conventional detector such as a search coil or Hall generator.

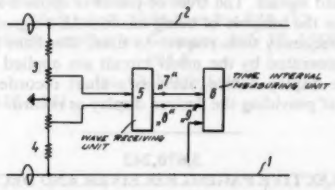


3,670,240

METHOD FOR DETERMINING THE DISTANCE TO A FAULT ON POWER TRANSMISSION LINES AND DEVICE FOR ITS REALIZATION ON D.C. LINES

Vasily Makarovich Maranchak, Lefortousky val, 7/6, korpus 9, kv. 12; Vladimir Nikolaevich Novella, Utrennyaya ulitsa, 10, korpus 2, kv. 43, and Stanislav Petrovich Veisky, ulitsa Lobanova, 4, kv. 36, all of Moscow, U.S.S.R.

Filed June 23, 1970, Ser. No. 49,025
Int. Cl. G01r *31/08*
U.S. Cl. 324—52 **3 Claims**



A method for determining the distance to a fault on power transmission lines from the time of propagation of electromagnetic waves along the line, in which at least at one point on the line the timer interval is measured between the instant of arrival of the leading edge of a wave occurring at the fault and propagated towards said point on the line around the loop formed by the line wires, and the instant of arrival of another wave occurring likewise at the fault and propagated towards said point around the loop formed by the line wires and earth, after which the distance to the fault is found as a function of the measured time interval.

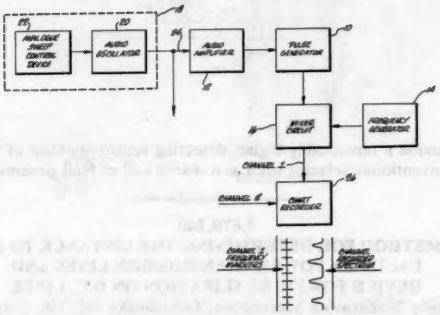
A device for applying the above-disclosed method on d.c. power transmission lines, comprising a series combination of a wave-receiving unit connected to the power transmission line via voltage dividers and a time-interval measuring unit, with the wave-receiving unit incorporating at least two transformers whose primaries are connected via voltage dividers to the unlike poles of the power transmission line and whose corresponding secondaries are combined in pairs and connected via rectifiers to said time-interval measuring unit, with some secondaries being connected series-aiding so that they develop a signal proportional to the electromagnetic wave propagated from the fault around one of the two said loops and the remaining secondaries being connected in series opposition so that they develop a signal proportional to the electromagnetic wave propagated from the fault around the other loop.

3,670,241

AUDIO FREQUENCY MARKER SYSTEM

George M. Low, Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of; Edward A. Cohen, 1021 Scripps Drive, Claremont, Calif., and Stanley L. Manatt, 358 San Juan Way, LaCanada, Calif.

Filed Aug. 11, 1970, Ser. No. 63,195
Int. Cl. G01r 23/14
U.S. Cl. 324—79 R 13 Claims



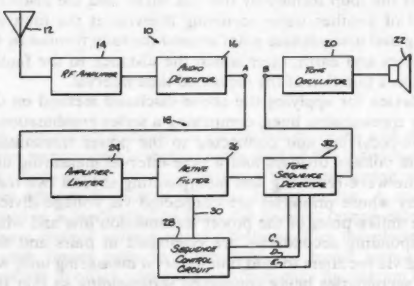
A system for providing a precise temporal display, or record, of the frequencies through which a sweeping audio frequency signal is swept, is disclosed. A sweeping audio frequency signal, of which the exact frequency with respect to time is unknown, is applied as an input to a pulse generator for the purpose of generating a train of pulses having a pulse repetition rate which is the same as the frequency of the applied signals. The train of pulses is applied to a mixer circuit for the purpose of being mixed with a signal having a known frequency with respect to time. The beat frequency signals generated by the mixer circuit are applied to an appropriate display device, such as a chart recorder, for the purpose of providing the desired display or record.

3,670,242

A SELECTIVE PAGING RECEIVER AND DECODER EMPLOYING AN ELECTRONIC FILTER MEANS

Charles F. McGarvey, Ringwood, N.J., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Dec. 3, 1969, Ser. No. 881,817
Int. Cl. H04b 1/100
U.S. Cl. 325—55 42 Claims



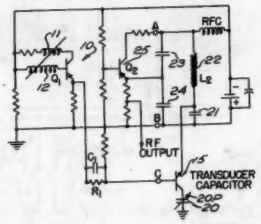
A preset tone grouping arranged in some predetermined order in tone encoded paging signals is detected by attempting to sequentially pass said tone encoded signals through an electric filter. The electric filter is initially arranged to pass only the first tone of the predetermined order and upon the passage of the first tone, the electric filter is then sequentially retuned to pass in the predetermined order the remaining tones of the predetermined tone grouping.

3,670,243

PHYSICAL DISPLACEMENT MEASURING SYSTEM UTILIZING IMPEDANCE CHANGING THE FREQUENCY OF AN OSCILLATORY CIRCUIT

Guy L. Fougere, Lincoln; John L. Rothery, Marblehead, both of Mass., and Raymond H. Miller, Warwick, R.I., assignors to Federal Products Corporation

Continuation-in-part of application Ser. No. 331,225, Dec. 17, 1963, now abandoned, and 592,502, Nov. 7, 1966, now abandoned, and 730,539, May 20, 1968, now abandoned. This application Feb. 27, 1970, Ser. No. 14,937
Int. Cl. G01r 27/26, 27/00
U.S. Cl. 324—57 R 3 Claims



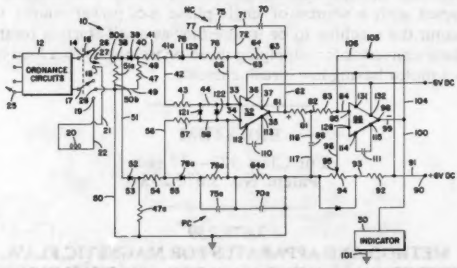
An analog data transmission system having as the transmitting means an oscillator with a tuned circuit and means to vary the tuning of this circuit by an incremental value by a switching means operating repetitively, the entire system including a receiving means having a frequency discriminator followed by a voltage sensitive readout device which measures the difference between the two alternate frequencies of the oscillator caused by the switching.

3,670,244

STRAY ELECTRICAL ENERGY DETECTOR CIRCUIT

James H. Trim, Hurst, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.

Filed June 29, 1970, Ser. No. 50,613
Int. Cl. G01r 31/02, 19/14
U.S. Cl. 324—72 10 Claims



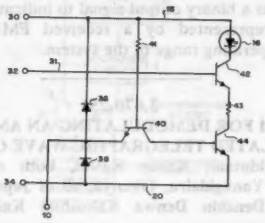
A circuit for detecting stray electrical energy in aircraft ordnance circuits and providing a warning signal if the stray electrical energy has such characteristics as to cause operation of pyrotechnic device, such as an igniter, if applied thereto.

3,670,245

LOGIC CLIP

Gary B. Gordon, Cupertino, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 5, 1970, Ser. No. 16,757
Int. Cl. G01r 15/12, 31/02
U.S. Cl. 324—73 R 7 Claims



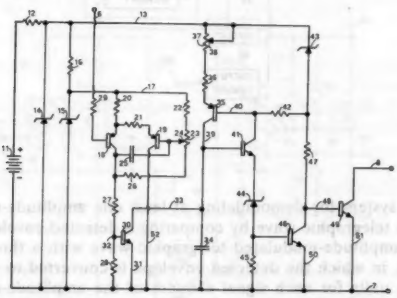
A device which clips onto dual in-line integrated circuit (referred to herein as I.C.) package has a visual indicator for each pin or lead on the I.C. package to indicate the logic state on each pin or lead, and the device determines which leads are connected to the power supply and ground and uses the voltage across those leads to power itself.

3,670,246

UNDER-VOLTAGE MONITORING DEVICE HAVING TIME DELAY MEANS FOR REGULATED POWER SUPPLIES

Joseph R. Gately, Woodside, N.Y., assignor to Forbro Design Corp., New York, N.Y.

Filed Mar. 16, 1970, Ser. No. 19,858
Int. Cl. G01r 19/16
U.S. Cl. 324—133 7 Claims



A regulated power supply for use with voltage sensitive devices such as integrated circuits is monitored for low voltage conditions. When the monitored voltage drops below or remains below a predetermined level for longer than a predetermined period of time an inhibit signal is provided.

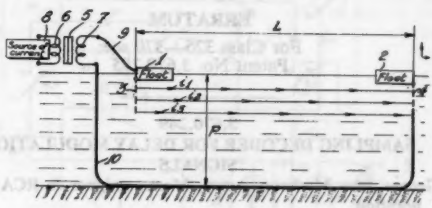
3,670,247

METHOD AND DEVICE FOR RADIATING MEGAMETRIC RADIO WAVES

Henri Gutton, 134, rue Perronet, Neuilly-sur-Seine, France; Jean Jacques Hugon, deceased, late of Asnieres, France; Simone Jeanne Georgette Hugon, 21, rue de Belfort, Asnieres, France; Marie Jeanne Augarde, 16, rue du Poste, Saint Barnabe-Marseille, France, and Emile Hugon, 101 Boulevard de Paris, Casablanca, Morocco (heirs)

Filed May 31, 1961, Ser. No. 122,367
Claims priority, application France, May 31, 1960, 828676
Int. Cl. H04b 13/00; H01g 1/34, 1/04
U.S. Cl. 325—28 20 Claims

1. A process for radiating megametric radio waves which consists in generating an alternating voltage at extremely low frequency ranging from 1 cycle to 100 cycles per second, applying said voltage to two points which are immersed within a conductive liquid mass close to the free surface thereof and distant from each other by several kilometers in order to create in said liquid mass between said points and close to



said free surface current streams parallel to said free surface and capable of generating by radiation electromagnetic waves propagating far off at said extremely low frequency, and rendering negligible the perturbations of said waves under the action of the induction effects produced by the application of said current to said points.

ERRATUM

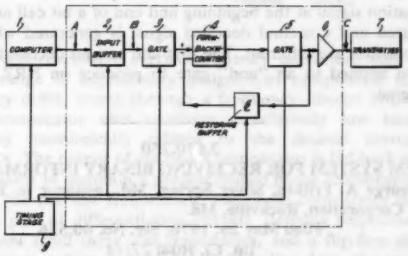
For Class 325—55 see:
Patent No. 3,670,242

3,670,248

METHOD AND APPARATUS FOR CONVERTING MULTI-PULSE COMMANDS INTO COMMAND UNITS FOR TRANSMISSION

Fritz Hofmann, Munich, Germany, assignor to Messerschmitt-Bolkow Gesellschaft mit beschrankter Haftung, Ottobrunn near Munich, Germany

Filed July 9, 1969, Ser. No. 840,412
Claims priority, application Germany, July 18, 1968, P 17 63 685.0
Int. Cl. H04b 1/04
U.S. Cl. 325—141 8 Claims



In a method of transmitting cyclically formed commands, in the form of individual pulses, over a transmission channel which is restricted in its transmission capacity, security against interference, or both, the individual pulses are combined to form larger command units which units are cyclically transmitted. The balance of pulses remaining within a transmission cycle, during formation of the larger command units, is transferred to the respective following transmission cycle. The apparatus includes an input buffer providing an output command in the form of a number of individual pulses related to a certain time period. A first gate circuit connects the buffer with the forward-counting input of a forward-backward counter, and the counter is connected, through a second gate circuit and an output amplifier, with a transmitter forming the input of a transmission channel. The output of the second gate circuit is connected, through a restor-

ing buffer, with the backward-counting input of the counter. The two buffers and the two gate circuits are controlled by a common timing stage, with the respective timing sequences for the individual components being coordinated in a selected manner.

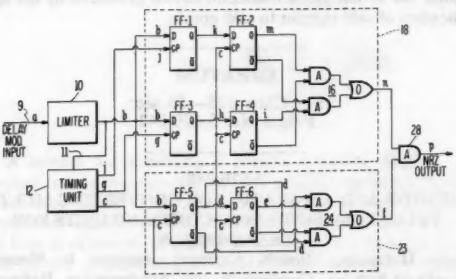
ERRATUM

For Class 325—370 see:
Patent No. 3,670,275

3,670,249
SAMPLING DECODER FOR DELAY MODULATION SIGNALS

George John Meslener, Acton, Mass., assignor to RCA Corporation

Filed May 6, 1971, Ser. No. 140,886
Int. Cl. H03k 9/04
U.S. Cl. 328—110 4 Claims

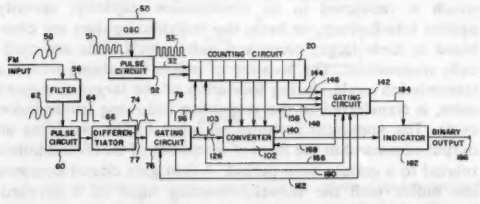


A decoder is disclosed for an input delay modulation information signal in which a transition occurs at the center of a bit cell containing a "1" and a transition occurs at the boundary between two successive bit cells containing "0s." The polarities of the information signal a quarter of a bit cell prior to and a quarter of a bit cell following the center of a bit cell are compared and a first decoded signal is generated when the polarities are different. The polarities of the information signal at the beginning and end of a bit cell are compared and a second decoded signal is generated when the polarities are different. The first and second decoded signals are applied to an "and" gate to produce an NRZ output signal.

3,670,250
FM SYSTEM FOR RECEIVING BINARY INFORMATION

George A. Fritkin, Silver Spring, Md., assignor to Tel-Tech Corporation, Rockville, Md.

Filed May 26, 1970, Ser. No. 40,526
Int. Cl. H04l 27/14
U.S. Cl. 329—104 14 Claims

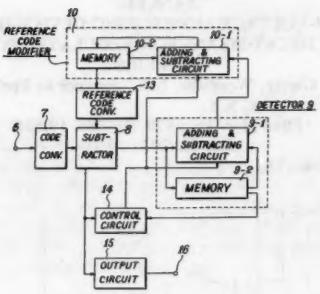


A system for determining the frequency of an oscillating signal is provided. The system can be used in the demodulating circuitry of an FM system for receiving binary information in the form of an FM signal. The frequency of the received FM signal is determined by transforming the FM signal into a series of pulses having voltage transitions occurring at a frequency determined by the received signal and by measuring the time lapse between successive voltage transitions in the series of pulses. The system is responsive only to frequencies in a predetermined frequency operating range, and produces a binary output signal to indicate the binary information represented by a received FM signal in the frequency operating range of the system.

3,670,251
SYSTEM FOR DEMODULATING AN AMPLITUDE-MODULATED TELEGRAPHIC WAVE OR WAVES

Sotokichi Shintani; Kazuo Kawai, both of Tokyo, and Hidetaka Yanagidaira, Ohmiya, all of Japan, assignors to Kokusai Denshin Denwa Kabushihi Kaisha, Tokyo-to, Japan

Filed Sept. 10, 1970, Ser. No. 71,082
Claims priority, application Japan, Sept. 12, 1969, 44/72463
Int. Cl. H03k 9/02
U.S. Cl. 329—109 2 Claims



A system for demodulating at least one amplitude-modulated telegraphic wave by comparing a detected envelope of the amplitude-modulated telegraphic wave with a threshold level, in which the detected envelope is converted to digital code units for each signal element of the amplitude-modulated telegraphic wave while the threshold level is also indicated by a reference code unit, so that the above-mentioned comparison operation is performed by digital circuitry. The reference code unit is corrected by the use of an accumulated result of successive ones of the above comparison.

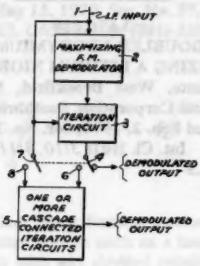
3,670,252
FREQUENCY MODULATION DEMODULATION SYSTEM

Gerald Rabow, Nutley, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed June 2, 1969, Ser. No. 829,399
Int. Cl. H03d 3/00
U.S. Cl. 329—112 7 Claims

A combined maximizing-iterative FM demodulator wherein the FM demodulator of an iterative FM demodulator coupled directly to the input for the FM signal to be demodulated is replaced by a maximizing FM demodulator. The maximizing demodulator provides an output signal approximating the input FM signal. The iteration circuit or circuits of the iterative demodulator then operates on this output signal and the input FM signal to provide the demodulated output

signal. The coarser the approximation by the maximizing demodulator the less complex is the implementation thereof.



The threshold improvement is greater than that achieved with an iterative demodulator alone.

3,670,253

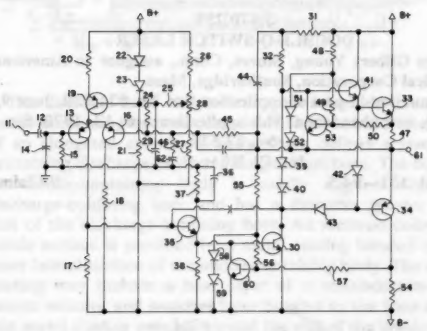
A.C. POWER AMPLIFIER

Arthur L. Newcomb, Jr., Route 4, P.O. Box 321, Yorktown, Va., and Richard N. Young, 7 Hondo Court, Hampton, Va.

Filed June 18, 1970, Ser. No. 47,441

Int. Cl. H03f *3/18*

U.S. Cl. 330—17 **5 Claims**



A high power, low distortion, A.C. power amplifier for laboratory and special applications.

3,670,254

UNDERDAMPED AUDIO PHASE SHIFT OSCILLATOR FOR INCREASING SELECTIVITY OF RADIO RECEIVER

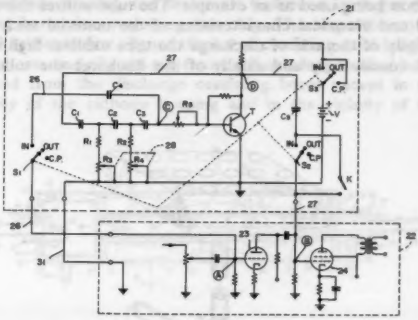
Avner Barzely, New York, N.Y., assignor to I. Jordan Kunik, New York, N.Y., a part interest

Filed Oct. 14, 1970, Ser. No. 80,538

Int. Cl. H03f *1/36*

U.S. Cl. 330—107 **10 Claims**

Underdamped audio phase shift oscillator connected across the audio voltage amplifier section of a radio receiver that sharply increases the selectivity or the response to signal of predetermined frequency and simultaneously relatively attenuates all other frequencies transmitted to output of receiver. The feedback circuit included in the phase shift oscillator is particularly useful in improving the selectivity of



a radio receiver working in the continuous wave (C.W.) mode.

3,670,255

PHASE-LOCK-STABILIZED SYSTEM FOR GENERATING CARRIER FREQUENCIES USABLE IN MULTIPLEX COMMUNICATION

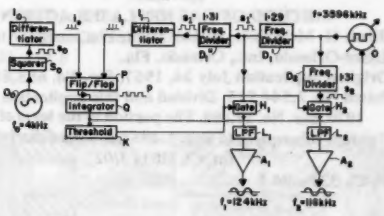
Giuliano De Nicolay, and Piero Venturini, both of Milan, Italy, assignors to Societa' Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Nov. 12, 1970, Ser. No. 88,535

Claims priority, application Italy, Nov. 13, 1969, 24367 A/69

Int. Cl. H03b *3/04*

U.S. Cl. 331—25 **6 Claims**



A voltage-responsive carrier-frequency oscillator, with a limited range of adjustability designed to compensate for frequency drifts, works through a frequency divider into a phase comparator also receiving a relatively low base frequency harmonically related to the desired carrier frequency. The output of the phase comparator is fed back to the oscillator to maintain a predetermined phase relationship between the two low frequencies. The phase comparator includes a pair of differentiation circuits, deriving respective pulse trains from these low frequencies, and a flip-flop alternately set and reset by interleaved pulses from the two trains; the integrated output wave of the flip-flop constitutes the feedback voltage controlling the output frequency of the oscillator.

3,670,256

LASER GUIDE CONSTRUCTION

William H. McMahan, Winter Park, Fla., assignor to Control Laser-Orlando, Inc., Orlando, Fla.

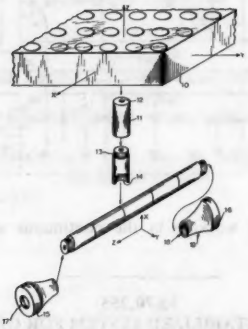
Original application July 24, 1967, Ser. No. 655,652, now Patent No. 3,544,915. Divided and this application Mar. 9, 1970, Ser. No. 17,461

Int. Cl. H01s *3/02*

U.S. Cl. 331—94.5 **8 Claims**

A laser construction utilizes a gas which assumes an ionic state at the discharge temperature and in the active discharge

region the plasma is contained and "guided" by a tube exhibiting anisotropic and semi-conductor properties, pyrolytic carbon being used as an example. The tube utilizes the thermal and electrical characteristics of the material such that radially of the axis of discharge the tube exhibits high thermal conductivity and axially of the discharge the tube exhibits low thermal conductivity and a semi-conductor electrical character. The tube is held at an anodic potential which enables employment of a unique starting technique and reduction of ionic bombardment between the plasma and the bore of the tube. Other electrical and physical configurations for reducing ion bombardment or "sputtering" are disclosed.



3,670,257

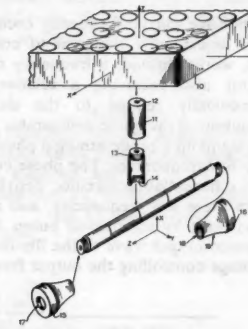
METHOD OF GAS ION LASER ACTION

William H. McMahan, Winter Park, Fla., assignor to Control Laser-Orlando, Inc., Orlando, Fla.

Original application July 24, 1967, Ser. No. 655,652, now Patent No. 3,544,915. Divided and this application Mar. 9, 1970, Ser. No. 17,460. The portion of the term of the patent subsequent to Dec. 1, 1987, has been disclaimed.

Int. Cl. H01s *3/02*

U.S. Cl. 331—94.5 **4 Claims**



A laser construction utilizes a gas which assumes an ionic state at the discharge temperature and in the active discharge region the plasma is contained and "guided" by a tube exhibiting anisotropic and semi-conductor properties, pyrolytic carbon being used as an example. The tube utilizes the thermal and electrical characteristics of the material such that radially of the axis of discharge the tube exhibits high thermal conductivity and axially of the discharge the tube exhibits low thermal conductivity and a semi-conductor electrical character. The tube is held at an anodic potential which enables employment of a unique starting technique and reduction of ionic bombardment between the plasma and the bore of the tube. Other electrical and physical configurations for reducing ion bombardment or "sputtering" are disclosed.

3,670,258

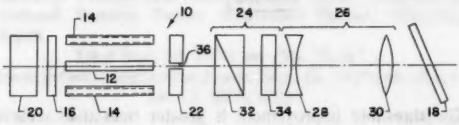
FREQUENCY-DOUBLED NEODYMIUM DOPED GLASS LASER UTILIZING A LITHIUM NIOBATE CRYSTAL

Peter C. Magnante, West Brookfield, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Feb. 2, 1970, Ser. No. 7,626

Int. Cl. H01s *3/10, 3/11*

U.S. Cl. 331—94.5 **1 Claim**



A frequency-doubled neodymium doped glass laser is provided in which a narrow spectral bandwidth, high-radiance neodymium doped glass laser is used to irradiate a lithium niobate crystal which is cut and aligned with the laser so that the crystal and laser are at the proper phase matching angle. A Q-switching device is included in the optical cavity of the laser to control the initiation of the laser oscillations thus permitting the attainment of higher peak power.

3,670,259

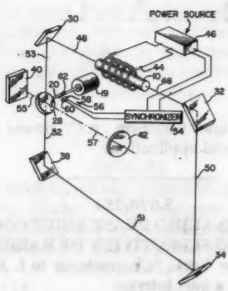
DOUBLE Q-SWITCH LASER

Charles Gilbert Young, Storrs, Conn., assignor to American Optical Corporation, Southbridge, Mass.

Continuation-in-part of application Ser. No. 831,558, June 9, 1969, now abandoned. This application Apr. 13, 1970, Ser. No. 27,529

Int. Cl. H01s *3/11*

U.S. Cl. 331—94.5 **9 Claims**

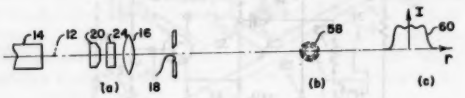


In a laser apparatus, both ends of the laser rod are simultaneously Q-switched effectively. A rotating mirror is provided, in a particular arrangement with fixed mirrors, to provide effectively two counter-rotating mirrors for Q-switching of both ends of the laser rod.

3,670,260
CONTROLLED OPTICAL BEAM FORMING DEVICE

Charles J. Koester, Sudbury, and Charles Hermas Swope, Holliston, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed May 15, 1970, Ser. No. 37,576
Int. Cl. G02b *27/00*; H01s *3/05*
U.S. Cl. 331—94.5 24 Claims

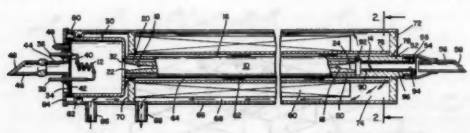


A controlled optical beam forming device distributes the light from a collimated source such as a laser within a controlled solid pattern with any desired relative intensity distribution. The device is formed of two optical elements. The first element apportions the beam into a plurality of extensive zones. The second element diffuses the light in the zones to form a beam having the desired form and distribution.

3,670,261
ANODE DESIGN FOR GAS DISCHARGE LASERS

Abel S. Halsted, Palos Verdes Peninsula, and David D. Hallock, Palos Verdes Estates, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 9, 1970, Ser. No. 87,816
Int. Cl. H01s *3/02*
U.S. Cl. 331—94.5 5 Claims



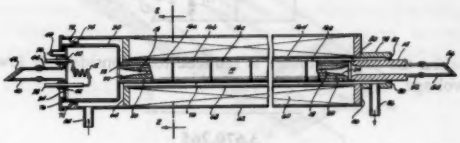
The disclosed laser anode arrangement includes a tubular anode-containing body of ceramic material bonded to an end of an elongated cylindrical body which defines a laser gas containing discharge-confining longitudinal bore. The bore of the anode-containing body is axially aligned with the discharge-confining bore and has a diameter greater than that of the discharge-confining bore. An electron collecting anode surface is provided by a metal coating bonded to the inner lateral surface of the anode-containing body. The metal coating may include a base layer of a molybdenum-manganese mixture and a nickel layer bonded to the base layer. The metal coating extends around the end of the anode-containing body away from the discharge-confining body and is brazed to a metal sleeve to provide an electrically conductive path to the metal coating. A coolant such as ordinary tap water may be passed in direct contact with the outer lateral surface of the discharge-confining body and a portion of the outer lateral surface of the anode-containing body. The coolant is electrically insulated from both the metal anode coating and the electrically conductive path thereto.

3,670,262
GAS LASER WITH DISCHARGE AND GAS RETURN PATHS THROUGH A COMMON CYLINDRICAL BODY

David D. Hallock, Palos Verdes Estates, and Abel S. Halsted, Palos Verdes Peninsula, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 2, 1970, Ser. No. 77,475
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 3 Claims

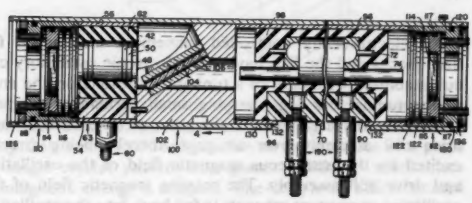
In the disclosed gas ion laser a plurality of axially aligned electrically insulating elongated cylindrical bodies are successively disposed between a cathode housing and an anode in hermetically bonded relationship with one another and with the cathode housing and the anode to form a laser gas containing hermetic enveloping assembly. The respective cylindrical bodies define aligned discharge confining axial longitudinal bores and aligned gas return off-axis longitudinal bores isolated from the discharge confining bores except in the vicinity of the cathode housing and in the vicinity of the anode. A coolant is passed in direct contact with the outer lateral surface of the bonded cylindrical bodies in an annular coolant flow channel between the outer lateral surface of the cylindrical bodies and an annular axial magnetic field generating arrangement coaxially disposed about the cylindrical bodies. Improved gas return flow at relatively low temperature results, enabling the achievement of high efficiency, high power laser operation.



3,670,263
LASER STRUCTURE

Joseph W. Kantorski, Southbridge, Mass.; David A. La Marre, and Donald A. Smith, both of Woodstock, Conn., assignors to American Optical Corporation, Southbridge, Mass.

Filed June 16, 1969, Ser. No. 833,330
Int. Cl. H01s *3/02*; H01j *19/58*
U.S. Cl. 331—94.5 1 Claim



The composite laser structure is self-aligning and; therefore, individual elements thereof are easily replaceable without contemporaneous adjustment. The method for fabricating and assembling the composite structure is also described.

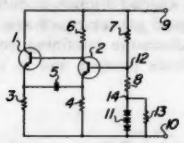
3,670,264
ASTABLE MULTIVIBRATOR

Shuzo Wakai, Kyoto, Japan, assignor to Matsushita Electronics Corporation, Osaka, Japan

Filed Mar. 22, 1971, Ser. No. 126,458
Claims priority, application Japan, Mar. 27, 1970, 45/26351
Int. Cl. H03k *3/282*
U.S. Cl. 331—113 R 1 Claim

A multivibrator circuit comprising a base bias-supplying circuit for a transistor which is connected with at least one diode in parallel with a resistor for obtaining stable temperature and voltage characteristics. This resistor serves to overcome the problem of the cessation of variations in bias voltage directly proportional to the supply voltage which is

caused by the insertion of the diode. Thus it is possible to start and stop oscillation of the multivibrator circuit even



when the supply voltage is reduced to a considerably lower voltage.

3,670,265

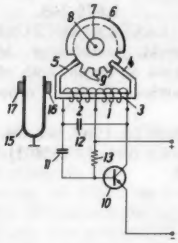
TUNING FORK STABILIZED TRANSISTOR DRIVE FOR TIME PIECES

Karl Schmitt, Achern, Germany, assignor to Gehap Gesellschaft fur Handel und Patentverwertung mbH. & Co. Kg, Germany

Continuation-in-part of application Ser. No. 719,782, Apr. 8, 1968, now Patent No. 3,579,974. This application July 14, 1970, Ser. No. 54,759

Int. Cl. G04c *3/00*; H03b *5/30*

U.S. Cl. 331—116 M **7 Claims**



An electronically controlled movement mechanism for time pieces and the like having an electronic oscillatory circuit stabilized by means of a tuning fork resonator, the ends of the tuning fork legs carrying small permanent magnets which face the axial ends of the yoke of an oscillation and drive coil assembly over air gaps, thereby being directly excited by the extraneous magnetic field of the oscillation and drive coil assembly. The moving magnetic field of the oscillating permanent magnets is fed back into the oscillation and drive coil assembly to stabilize its oscillatory frequency. The circuit is further stabilized by a field-responsive resistor in parallel with the resistance of the oscillatory circuit and interacting with the oscillating permanent magnets.

3,670,266

PHASE-COHERENT FREQUENCY-SHIFT MODULATION SYSTEM FOR OSCILLATION MULTIVIBRATOR

Patrick de Laage de Meux, Saint-Germain-en-Laye, France, assignor to Ligne Telegraphiques et Telephoniques, Paris, France

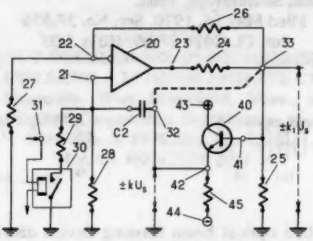
Filed Dec. 15, 1970, Ser. No. 98,383

Claims priority, application France, Jan. 14, 1970, 7001141

Int. Cl. H04l *27/12*

U.S. Cl. 332—14 **3 Claims**

A modulation system for a free-oscillating multivibrator consisting of an operational amplifier having a first non-phase inverting input, a second phase-inverting input and an output, combined with two feedback circuits respectively coupling said output to said first and second inputs. One of said circuits consists of a voltage divider, while the second includes a capacitor in series with a resistor. Frequency modulation is obtained by variation of the latter resistor. Preferably, the latter circuit also includes a transistor in



emitter-follower connection and having its base electrode fed from the output of the multivibrator through other voltage divider means.

3,670,267

MICROWAVE SWITCH UTILIZING LATCHED FERRIMAGNETIC MATERIAL IN COUPLING APERTURE OF WAVEGUIDE COUPLER

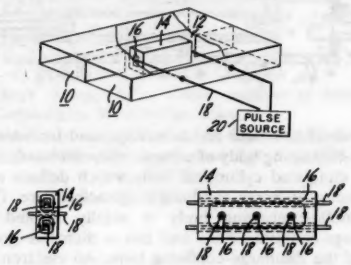
Shojiro Nakahara, and Hidetoshi Kurebayashi, both of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 17, 1970, Ser. No. 11,939

Claims priority, application Japan, Feb. 19, 1969, 44/12389

Int. Cl. H01p *1/10*

U.S. Cl. 333—1.1 **6 Claims**



Two rectangular waveguides are interconnected by a coupling aperture in which a ferrimagnetic body is disposed. At least one latching conductor extends through the body in the axial direction of the waveguides or in a direction perpendicular thereto. A pulse current flowing through the conductor causes a change in direction or magnitude of the magnetization of the ferrimagnetic body. This permits an electromagnetic wave, applied to either one of the input waveguide ends, to appear at that output end at which the wave did not previously appear.

3,670,268

WAVEGUIDE HYBRID JUNCTION WHEREIN A WALL OF THE E-ARM IS CONTIGUOUS WITH A WALL OF THE H-ARM

William R. Connerney, Needham, Mass., assignor to Raytheon Company, Lexington, Mass.

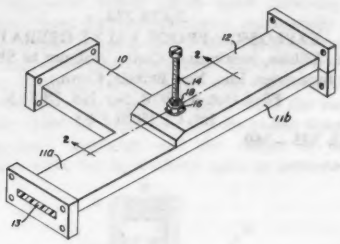
Filed Apr. 15, 1970, Ser. No. 28,894

Int. Cl. H01p *5/12*

U.S. Cl. 333—11 **3 Claims**

A waveguide hybrid junction for microwave energy in which the various arms, i.e., the E-arm, and two sidearms, are fabricated from rectangular waveguides, the E-arm having a 90° bend formed therein in close proximity to the plane

of the joint between such arm and the H-arm. A tuning post, located at the 90° bend of the E-arm, is used to compensate



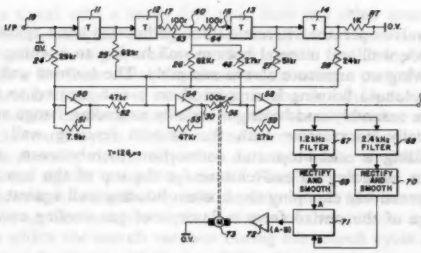
for field distortion so that electrical symmetry of the hybrid junction is maintained.

3,670,269

AUTOMATIC TRANSVERSAL EQUALIZER

Arthur T. Starr, New Barnet, and David G. Edwards, Tonbridge Wells, both of England, assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 6, 1970, Ser. No. 87,546
Claims priority, application Great Britain, Apr. 21, 1970, 19,039/70
Int. Cl. H04b *3/04*
U.S. Cl. 333—18 **10 Claims**



An equalizing circuit, intended to be inserted between the transmission link and the receiver of an electrical information transmission system, the equalizer being arranged to have, within a preselected bandwidth of audio frequencies, an amplitude frequency response in the form of a family of similar curves, the equalizer including comparison means which is responsive to the difference between the outputs of the equalizer at two different frequencies of which at least one is within the said bandwidth to thereby automatically select a predetermined one of the said curves.

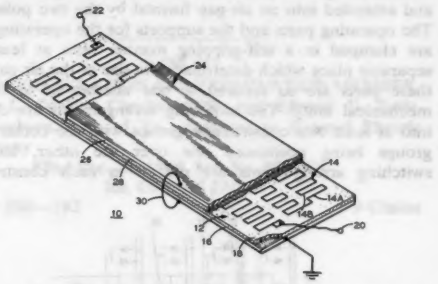
3,670,270

ELECTRICAL COMPONENT

William T. Storey, II, West Chester, Pa., assignor to Technitrol, Inc., Philadelphia, Pa.

Continuation-in-part of application Ser. No. 629,139, Apr. 7, 1967, now abandoned. This application Apr. 15, 1968, Ser. No. 725,570
Int. Cl. H03h *7/30, 7/36*
U.S. Cl. 333—30 **8 Claims**

A distributed constant electrical component which may be utilized as a transmission or a delay line is disclosed which utilizes a length of non-conductive material such as a matrix of polytetrafluoroethylene in which is dispersed particles of a magnetic material such as powdered iron or powdered ferrite. Alternatively, a length of ferrite material may be used. At least a portion of a signal conductor extends through the length of material to provide a path for electrical signals. Both balanced and unbalanced lines are disclosed.



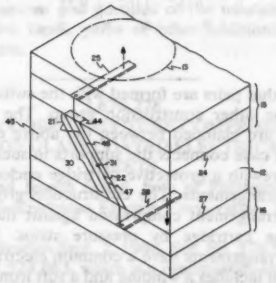
There also is disclosed a device which may be used as a variable delay line which includes means for varying the spacing between portions of the length of material.

3,670,271

TWO PORT MAGNETOELASTIC DELAY LINE

Carmine F. Vasile, Greenlawn, N.Y., assignor to Hazeltine Corporation

Filed Sept. 18, 1970, Ser. No. 73,287
Int. Cl. H03h *7/30*
U.S. Cl. 333—30 **14 Claims**



A two part magnetoelastic delay line in which the coupling elements of an electromagnetic coupling structure are arranged in a colinear configuration at the end-face of a piece of single crystal yttrium iron garnet (YIG) to which electromagnetic energy is coupled. The sample of YIG is located in an axially varying magnetic bias field whose lines of magnitude include concentric circles of constant magnitude which increase in value radially from a point near the center of the end-face of the YIG, and the coupling devices are positioned so that each device crosses the same circle of magnitude only once, and so that the coupling devices together traverse the maximum number of concentric circles of magnitude of the bias field at the end-face. Alternate embodiments are also considered.

3,670,272

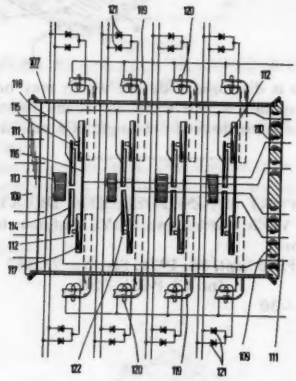
RELAY SWITCHING APPARATUS

Gundokar Braumann, Munich; Walter Klor, Hofenschaftlarn, and Albert Huber, Unterpfaffenhofen, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Oct. 27, 1970, Ser. No. 84,441
Claims priority, application Germany, Oct. 31, 1969, P 19 54 952.1
Int. Cl. H01h *67/04*
U.S. Cl. 335—112 **12 Claims**

A relay switching apparatus of particular utility in telephone switching installations is described. The apparatus

includes a plurality of magnetically actuatable switching arrangements encapsulated in a protective cartridge. The magnetic circuits of each switching arrangement includes first and second polestrips and an armature having its movable end extended into an air-gap formed by the two polestrips. The operating parts and the supports for the operating parts are clamped in a self-gripping manner onto at least one separator piece which determines the size of the air-gap, and these parts are so secured to one another as to form a mechanical unity. The switching arrangements are divided into at least two construction groups with the construction groups being positioned one over the other, and the switching arrangements are placed in each construction



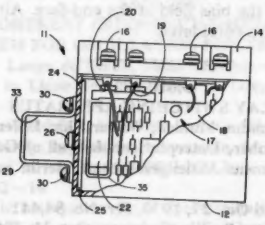
group such that pairs are formed with the switching arrangements in the other construction group. The switching arrangements are clamped between the above described supports, and a case connects the supports in such a manner as to form therewith a protective cartridge enclosing all of the switching arrangements. The construction groups formed a switching arrangement compressed against the sides of the walls of the cartridge by pressure strips. Each pair of switching arrangements have a common electrical energizing circuit which includes a winding and a soft iron yoke with the shoulders of the yoke extending outside of the cartridge and being magnetically coupled to the second pole pieces in the cartridge.

3,670,273

CURRENT RESPONSIVE SWITCHING MODULE

Robert G. Ries, Milwaukee, Wis., assignor to Square D Company, Park Ridge, Ill.

Filed Dec. 4, 1970, Ser. No. 95,163
Int. Cl. H01h *51/28*
U.S. Cl. 335—204 **5 Claims**



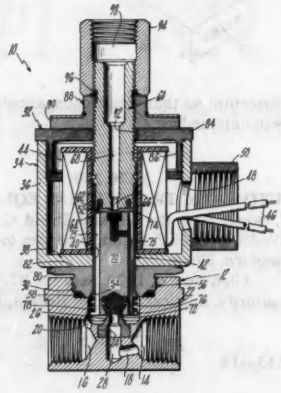
A reed relay mounted within a housing is responsive to a magnetic field induced in a flux-conducting clip mounted on an outer surface of the housing by current in a conductor passing through the clip. A flux diverting shield is placed over the relay in an adjusted position to provide the relay with a predetermined sensitivity to the magnetic field.

3,670,274

EXPLOSION-PROOF VALVE OPERATOR

John E. Ellison, Newington, Conn., assignor to Skinner Precision Industries, Inc., New Britain, Conn.

Filed Oct. 6, 1970, Ser. No. 78,513
Int. Cl. H01f *7/08*
U.S. Cl. 335—260 **3 Claims**



A valve operator wherein a solenoid housing has a cylindrical side wall and integral bottom wall having an opening for receiving an armature sleeve assembly. The bottom wall of the solenoid housing is supported on a nut secured to the sleeve assembly and having a radially extending flange substantially coextensive with the bottom housing wall for providing a metal-to-metal connection therebetween, and means including an end closure for the top of the housing compressively clamping the bottom housing wall against the flange of the nut to form a flameproof gas cooling escape path.

3,670,275

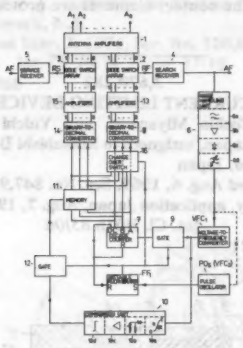
ELECTRONIC AND AUTOMATIC SELECTOR DEVICE CONNECTED TO AN ANTENNA ARRAY FORMED BY TWO OR MORE ANTENNAS

Kalevi Juhani Kalliomaki, Oulu; Martti Eelis Tiuri, Tapiola, and Seppo Matti Vakkila, Helsinki, all of Finland, assignors to Valsala Oy, Vantaa, Finland

Filed Apr. 14, 1970, Ser. No. 28,408
Int. Cl. H04b *7/08*
U.S. Cl. 325—370 **11 Claims**

An electronic automatic selecting device has an antenna array consisting of two or more antennas pointing in different directions for the purpose of selecting and connecting to a service receiver that antenna from which the desired radio signal is best obtained. The selection is carried out by a selecting device and a search receiver having a low frequency output, from which, when receiving a frequency modulated emission, a noise signal is obtained proportional to the S/N ratio of the signal received by the receiver. This signal steers the selecting device. In accordance with the present invention the selecting device includes a noise handling unit the input of which receives the noise voltage from the search receiver and the output of which is large when the search receiver receives a signal with a poor S/N ratio and small when the search receiver receives a signal with a good S/N ratio. There is a voltage-to-frequency converter the operating frequency of which is determined by the output voltage of

the noise handling circuit, whereby the output frequency is high when the output voltage is large and is low when the output voltage is small, a pulse oscillator which oscillates at a constant frequency and which gives the search command, an electronic change-over switch which upon receiving the search command from the pulse oscillator, sequentially connects, steered by the voltage-to-frequency converter, the antennas of the antenna array to the search receiver, and which after sampling all antennas returns to zero. There is also a circuit for comparing the signals obtained from the various antennas to the input of which are fed the pulses from the voltage-to-frequency converter and the output of which produces a pulse when during a search cycle an antenna giving a signal with a better S/N ratio than any other antenna previously sampled during the search cycle is connected to the search receiver, and a memory circuit to the input of which is fed from a dividing circuit constituting a part of said electronic change-over switch, the number in binary form of each of the antennas connected to said search receiver during the search cycle. This binary number moves to the output of the memory circuit only when an output pulse is obtained from the signals comparing circuit. Finally there is an electronic switch controlled by said memory circuit and connecting the service receiver to that antenna of the antenna array from which the search receiver during the search cycle has received the signal with the best S/N ratio.

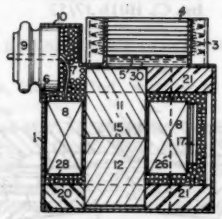


3,670,276

HERMETIC TRANSFORMER

Charles Theodore, Huntington Beach, Calif., assignor to LTV Ling Altec, Inc., Anaheim, Calif.

Filed Feb. 11, 1971, Ser. No. 114,440
Int. Cl. H01f 27/02
U.S. Cl. 336—92 **11 Claims**



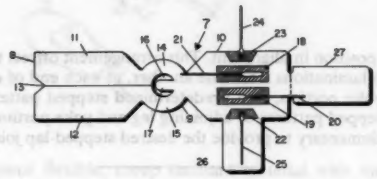
A hermetically-sealed completely oil-filled high voltage transformer of small size and rugged construction for use over a wide range of ambient temperature and ambient pressure. Required expansion bellows are desirably small because interstices between the core-coil structure and the enclosing case are filled with at least one insulating piece and numerous refractory beads in addition to oil. The oil is restricted to the internal volume that is under high electrical stress.

3,670,277

UNITARY INSULATION AND TERMINATION MEMBER

Charles L. Decker, Charlottesville, and Edward G. Tutle, Waynesboro, both of Va., assignors to General Electric Company

Filed Dec. 22, 1969, Ser. No. 887,226
Int. Cl. H02f 27/30
U.S. Cl. 336—192 **9 Claims**



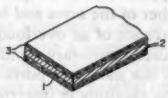
An improved means for providing coil wire terminations in electrical coils used in relays and the like, which utilizes a unitary insulation member carrying electrically conductive terminal means and captivating cinches which secure the winding terminations and portions of the insulation without need of adhesive tapes, yarns or other additional assembly securing elements.

3,670,278

BONDED CORE STRUCTURE COMPRISING A PLURALITY OF GLASS COATED ELECTRICAL STEEL SHEETS

Karl Foster, and Joseph Seidel, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original application Sept. 2, 1966, Ser. No. 576,963, now Patent No. 3,528,863, which is a continuation-in-part of application Ser. No. 556,337, June 9, 1966, now abandoned. Divided and this application June 15, 1970, Ser. No. 46,376
Int. Cl. H01f 27/24
U.S. Cl. 336—213 **5 Claims**



An oriented silicon steel product and method for producing the same is described in which improved magnetostriction and strain sensitivity are obtained by means of bonding a thin glass layer to the surface of the steel.

3,670,279

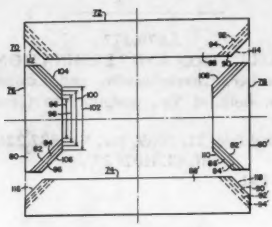
MAGNETIC CORES AND METHODS OF CONSTRUCTING SAME

William Q. Millsop, Muncie, Ind.; Belvin B. Ellis, Pulaski, and Charles E. Burkhardt, Sharon, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 14, 1971, Ser. No. 143,429
Int. Cl. H01f 27/04, 41/02
U.S. Cl. 336—217 **17 Claims**

Magnetic cores of the stacked type, and methods of constructing same, having stepped-lap joints between adjoining

leg and yoke portions of the core. The length dimensions of the leg and yoke laminations are changed in opposite directions from layer to layer of the magnetic core, while maintaining the midpoints of the laminations in each leg and



yoke position in alignment. This arrangement offsets the ends of the laminations from one another, at each end of each leg and yoke portion, in a predetermined stepped pattern, with the stepped patterns of adjoining leg and yoke portions being complementary to provide the desired stepped-lap joints.

3,670,280

CIRCUIT BREAKER

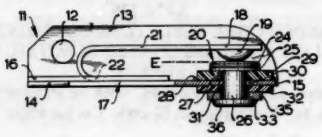
Erwin Nagele, Hessigheim, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 15, 1970, Ser. No. 98,288

Claims priority, application Germany, Dec. 19, 1969, P 19 63 666.9

Int. Cl. G01k *5/62*; **H01h** *37/52, 61/01*

U.S. Cl. 337—111 **4 Claims**



A circuit breaker has a support on which a one-piece bimetallic strip is mounted. The strip has two arms which together define a substantially U-shaped configuration, and a portion narrower than one of the arms and fast with the same as well as with the support. A first electrical contact is provided on the support and a cooperating second electrical contact on the other of the arms and heating of the bimetallic strip due to occurrence of an overload in a circuit in which it is interposed, causes temporary bending deformation of the other arm and of the narrower portion in mutually opposite directions, thereby resulting in interruption of the circuit due to disengagement of the electrical contacts.

3,670,281

THERMALLY RESPONSIVE SWITCH AND METHOD FOR MAKING THE SAME

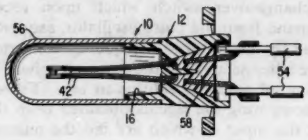
William D. Rattan, Paramount, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Apr. 5, 1971, Ser. No. 131,205

Int. Cl. H01h *37/04, 37/52, 61/06*

U.S. Cl. 337—112 **8 Claims**

A thermally responsive switch and method for making the same in which a base container having a cover supports a pair of contact elements, including at least one bimetallic element, and is filled with a hardenable material cured at the desired operating temperature of the switch to form an integral support base. The contact elements each have a protruding tab which cooperates with an interior wall of the base container so as to properly position the contact elements in the container after the cover has been attached, to close off the bottom of the container such that the hardenable material may be retained therein, and to cause the con-



tact elements to pivot together at their contact ends under the force of gravity whereby the switch is accurately calibrated and the contact elements are protected during assembly.

3,670,282

CURRENT LIMITING DEVICE

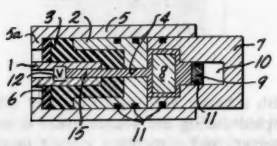
Toshio Itoh; Toshio Miyamoto, and Yuichi Wada, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1969, Ser. No. 847,924

Claims priority, application Japan, Aug. 7, 1968, 43/55958

Int. Cl. H01h *85/06*

U.S. Cl. 337—21 **9 Claims**



A unitary structure of two opposite electrodes insulated from each other by a solid insulation is connected to a housing including cylinder and piston means. A current limiting material with self-restoration centrally extends through the structure except for the external portion of the outer electrode and contacts the piston. To prevent the material vaporized upon a flow of overcurrent from externally leaking O-rings or a metallic gasket can be disposed between the structure and housing. Alternatively the housing may be jointed to the structure through metal-to-metal or metal-to-insulation contact under pressure, shrink fit, welding or brazing.

3,670,283

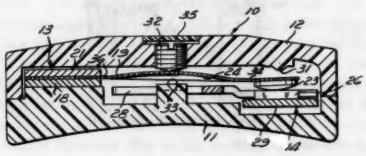
MOTOR OVERLOAD PROTECTOR

Ronald L. Holden, Mansfield, Ohio, assignor to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed Oct. 2, 1970, Ser. No. 77,635

Int. Cl. H01h *37/52*

U.S. Cl. 337—354 **11 Claims**



A motor overload protector is disclosed which includes a cantilever mounted bimetal snap element provided with a mobile contact at its free end. The snap element moves the

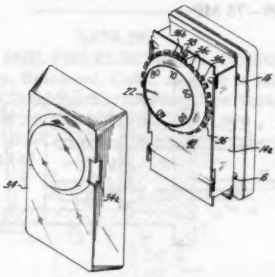
mobile contact into and out of engagement with the fixed contact carried by the body. A central stop post is provided by the body located to engage the central portion of the snap element when the contacts are open. A pull-in calibration screw engages the opposite side of the bimetal when the contacts are closed to calibrate the temperatures on opening. The snap travel of the installed snap element is reduced to limit the stresses imposed on the bimetal and reduce the tendancy to fatigue or crack. Contact life is improved because the contacts reliably snap both open and closed.

3,670,284

RANGE LIMITER FOR A THERMOSTAT

Jean R. Fortier, South Orange, and Donald P. Wrobel, Allendale, both of N.J., assignors to Federal Pacific Electric Company, Newark, N.J.

Filed Mar. 3, 1971, Ser. No. 120,669
Int. Cl. H01h *37/04, 37/18*
U.S. Cl. 337—360 **6 Claims**



A thermostat is described having a bimetal that actuates a snap-switch for maintaining the temperature of the room at approximately a given set-point. A knob operates a cam for controlling the resting position of the bimetal to determine the temperature set-point. The knob has a series of radial fingers which can be broken away individually, and the stationary structure of the thermostat has a fixed lug that can be bent up into the path of the knob fingers. Certain fingers of the knob are broken away and the lug is bent into the space left free of fingers. The remaining fingers limit the rotation of the knob and thus limit the range of adjustment.

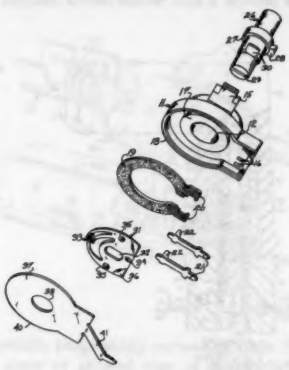
3,670,285

VARIABLE RESISTANCE CONTROL WITH END COLLECTOR

Jack A. English, Elkhart, Ind., assignor to CTS Corporation, Elkhart, Ind.

Filed Mar. 16, 1970, Ser. No. 19,969
Int. Cl. H01c *9/02*
U.S. Cl. 338—175 **22 Claims**

A variable resistance control is provided wherein a contactor is pinched between a resistance element and a collector. The resistance element and collector lie substantially flatwise thereby providing uniform pressure on the contactor pinched therebetween. The contactor is constrained to rotate upon rotation of a driver rotatably supported in a housing. To minimize cost of the control a portion of the collector is utilized to close the housing. The driver has axially opposed shoulders bearing against the outer faces of the housing and collector to hold the same in place. The housing is formed of



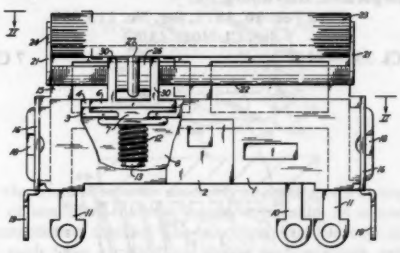
a one piece flexible, creep resistant material with integral resilient legs for mounting the control to a panel.

3,670,286

POTENTIOMETER ADJUSTABLE BY ROTATABLE DRUM

Mogens W. Bang, and David A. Olson, both of Ridgway, Pa., assignors to Stackpole Carbon Company, St. Marys, Pa.

Filed June 7, 1971, Ser. No. 150,302
Int. Cl. H01c *9/02*
U.S. Cl. 338—180 **8 Claims**



The front wall of the elongated case of a linear motion potentiometer is provided with a longitudinal slot, in which a slide is disposed. The slide carries a bridging contact inside the case, where it engages spaced parallel resistor and collector elements. In front of the case and parallel to the slot are a stationary lead screw and a manually rotatable cylindrical drum, both supported from the case. The drum, when rotated, rotates internally threaded cylindrical means mounted on the screw and thereby moves it along the screw and drum. The slide is connected with the rotatable means so that the slide will be moved lengthwise of the case when the drum is rotated.

3,670,287

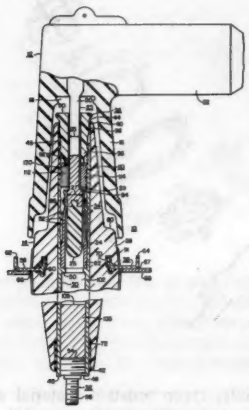
ELECTRICAL CONNECTOR ASSEMBLY

August I. Keto, Sharpsville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 17, 1970, Ser. No. 64,383
Int. Cl. H01r *11/30*
U.S. Cl. 339—12 R **20 Claims**

A load-break electrical connector assembly including a plug-in cable connector having a probe which includes a first

electrical conductor, and a bushing assembly which includes a second conductor adapted to engage the first conductor of the cable connector. A magnetic clamp is disposed in the



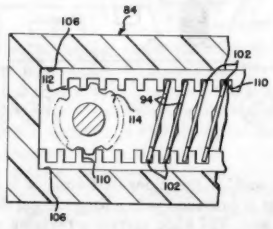
bushing assembly which prevents removal of the cable connector from the bushing assembly when the magnitude of current flowing through the first and second electrical conductors exceeds a predetermined magnitude.

3,670,288

TORSION CONTACT ZERO-INSERTION FORCE CONNECTOR

William Robert Evans, Hummelstown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 16, 1971, Ser. No. 115,358
Int. Cl. H01r *13/62*
U.S. Cl. 339—74 R **7 Claims**



Disclosed is a connector for receiving the edge of a printed circuit board, ceramic substrate or other circuit boards of the like. The connector contains a plurality of pre-twisted contacts that are untwisted for zero-force insertion of a circuit board after which they are released to return toward their original position making electrical contact with such board.

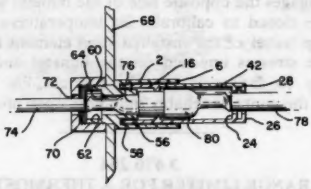
3,670,289

TANDEM MATING RECEPTACLES

Peter Martin Bruner, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed June 12, 1970, Ser. No. 45,735
Int. Cl. H01r *13/54*
U.S. Cl. 339—91 R **3 Claims**

An assembly of tandem mated receptacles including first receptacles connected by a web and adapted for bulkhead mounting. A plurality of second receptacles is provided with a removable cover plate and are partially received in mating engagement within the first receptacles. A portion of the first receptacles overlie the cover plate to prevent accidental



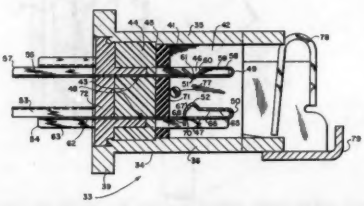
removal thereof. A tongue associated with the second receptacles is resiliently latched in an aperture provided in the web.

3,670,290

ELECTRICAL CONNECTOR

Wilhelm Angele, and Hans G. Martineck, both of Huntsville, Ala.

Filed Apr. 21, 1971, Ser. No. 136,006
Int. Cl. H01r *23/52, 23/54*
U.S. Cl. 339—75 MP **10 Claims**



A separable flat cable connector having each pair of mating electrical contacts fully isolated from one another by means of insulating compartments extending rearwardly from the mating face of the plug half. The plug body is an integral, molded plastic member with two rows of compartments separated by a central wall. Two flat conductor cables, introduced through the rear of the plug, have exposed conductors extending forward along the central wall, with the conductor ends being secured in grooves defined by projections on the central compartment wall spaced back from the mating face. The receptacle half of the connector has an outer housing adapted to receive the plug body and forward-projecting spring contact elements with arcuate surfaces for engagement with the exposed conductors in the plug. Spring contact elements of the receptacle are disposed so that their rearwardly extending ends are alined in four spaced-apart rows to facilitate soldering thereto of conductors of round wire or flat conductor cables.

3,670,291

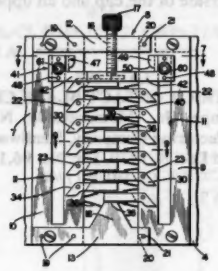
CONNECTING DEVICE

Banancio Garcia, 2691 Holl Road Northwest, North Canton, Ohio

Filed May 14, 1970, Ser. No. 37,208
Int. Cl. H01r *13/54;* **A44b** *19/02*
U.S. Cl. 339—92 M **4 Claims**

A connecting device for joining together two panels end-to-end of various sizes and materials. Each panel includes a plurality of pivotally mounted toggle arms which are alternately positioned with respect to arms on the opposite panel. The toggle arms are also positioned so that their ends overlap and interlock when in closed or engaged position. A top and bottom bar partially connects and properly positions

the two panels. The top bar may be provided with a bolt or other means to secure the interlocked toggle arm ends together against the bottom connecting bar when in closed position. A slide member is provided with two pairs of slidable cams to operate the toggle arms which are provided with corresponding cams. The device is connected and disconnected by opposite movement of the slide member with the cams pivoting the toggle arms open or closed by engaging mating cam surfaces.

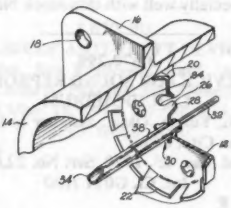


3,670,292

GROUNDING FOIL FOR ELECTRICAL CONNECTORS

William K. Tracy, Rosemead, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 29, 1970, Ser. No. 6,900
Int. Cl. H01r *23/06, 23/08*
U.S. Cl. 339—143 R 3 Claims



A grounding foil having one or more cavities therein formed of tangs. The surface of the tangs integral with the foil members contacts electrical elements inserted in the cavities formed by the tangs. The front edge surface of the tangs do not contact the electrical elements, thus prolonging both the use of the electrical element and preventing failure of the tangs. A relatively large number of tangs may be provided which occupy a sufficient area so that should failure of one of the tangs occur, the remaining tangs will provide sufficient electric contact as well as support so that the electrical element supported in the tangs will not be displaced. The tangs may be designed so that the tang portion integral with the foil has a greater stiffness than the tip portion of the tang.

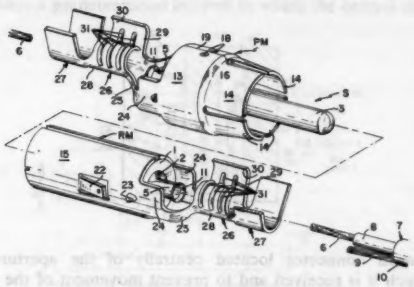
3,670,293

SHIELDED WIRE CONNECTORS

William Joseph Garver, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 20, 1970, Ser. No. 65,462
Int. Cl. H01r *17/18*
U.S. Cl. 339—177 MP 5 Claims

A shielded cable electrical connector is provided with a coaxial contact section having inner and outer contact members separated from each other by a dielectric means which carries the inner contact member. The outer contact member is provided with axially-spaced ferrule means coaxially aligned with ferrule member means of the inner contact member extending outwardly from the dielectric means. One of the axially-spaced ferrule means has a first section of substantially annular construction and a second section extending substantially tangentially outwardly from the first section so that a drain or ground wire of a shielded cable can be crimped between the first and second sections while a center conductor of the cable is crimped in the ferrule member means of the inner contact member.

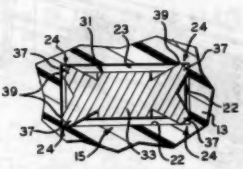


3,670,294

MULTIPLE CONTACT ELECTRICAL CONNECTOR

Gordon L. Johnson, Jamestown, N.Y., and Thomas E. Gannoe, Warren, Pa., assignors to Sylvania Electric Products Inc.

Filed Oct. 19, 1970, Ser. No. 81,847
Int. Cl. H01r *13/50, 9/08*
U.S. Cl. 339—195 M 4 Claims



An electrical connector assembly consisting of a connector block of insulative material having a plurality of connector pins established therein. The pin receiving openings in the block each have a cylindrical shape portion which extends into the block a predetermined distance until it interconnects and aligns with a rectangular shaped portion which extends on through to the opposing surface of the block. The connector pins for this assembly each consist of a cylindrical shaped male end, a centrally located retaining portion, and a rectangular shaped wirewrap end.

3,670,295

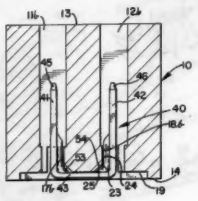
TERMINAL BLOCK AND TERMINAL CONNECTOR

Hans Raymond Ege, Des Plaines, and Walter L. Doctor, Jr., Schaumburg, both of Ill., assignors to Underwriters Safety Device Co., Chicago, Ill.

Filed Dec. 28, 1970, Ser. No. 101,807
Int. Cl. H01r *9/00*
U.S. Cl. 339—198 S 16 Claims

The terminal block has a plurality of paralleling apertures for receiving blades of different types of terminal connectors. One type of connector is U-shaped with two generally parallel spaced apart blades interconnected at their bases. Each of the blades has a locating projection. Another type of connector is of the spade type with two spaced apart co-planar blades connected to a co-planar base portion of the spade type connector. A plurality of notches are formed on one face of the terminal block and each notch is located adjacent

to and opens into one of the apertures. A slot extends into the one face of the block between and communicating with at least two adjacent apertures. The projections cooperate and mate with the notches to maintain each blade of a U-



shaped connector located centrally of the aperture into which it is received and to prevent movement of the blades against a side wall of the aperture. The slot receives the base portion of the spade type connector with the blades thereof received in the two adjacent apertures.

3,670,296

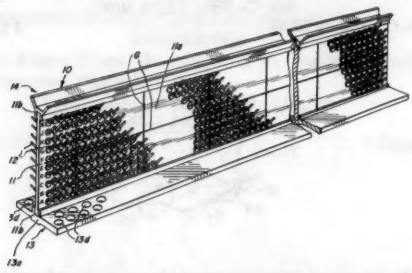
WIRE TERMINATION BLOCK CONSTRUCTION

Joseph H. MacKenzie, Jr., 431 Prairie Avenue, Wilmette, Ill.

Filed Jan. 27, 1971, Ser. No. 110,080

Int. Cl. H01r *9/00*

U.S. Cl. 339—198 H **5 Claims**



A wire termination block construction is provided wherein various components thereof may be readily extruded and interfitted so as to form a block of desired length and configuration.

3,670,297

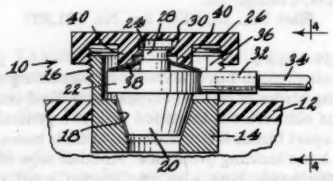
BATTERY CONNECTOR ASSEMBLY

Walter Erlenbach, Selma, Ind., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Mar. 4, 1970, Ser. No. 16,420

Int. Cl. H01r *7/08*

U.S. Cl. 339—232 **5 Claims**



The present invention relates generally to electrical connectors and more particularly to electrical connectors for storage batteries and the like. The illustrated embodiment includes a tapered plug member adapted to contact an internal complementary surface of a metallic battery insert. An internally threaded cap swively supports the upper extremity of the tapered plug member, and a spring washer is interposed between the underside of the cap and an upper surface of the tapered plug.

3,670,298

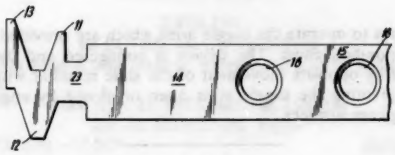
ELECTRIC CONTACT BLADE CRIMP

Ferdninand Klumpp, Jr., Mountainside, N.J., assignor to Heyman Manufacturing Company, Kenilworth, N.J.

Filed Dec. 8, 1970, Ser. No. 96,118

Int. Cl. H01r *11/08*

U.S. Cl. 339—276 T **6 Claims**



An electric plug blade has a crimp using the neck width for part of the crimp finger length improving the strength and reducing the resistance of the blade. Other gripping fingers may be offset from each other, extending the latitudinal distance between one fingertip and an opposite fingertip. The crimp works especially well with thin stock blades.

3,670,299

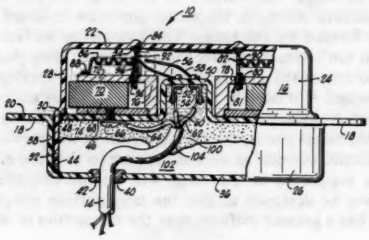
SPEAKER DEVICE FOR SOUND REPRODUCTION IN LIQUID MEDIUM

Jay Dee C. Kahn, Yukon, Okla., assignor to LTV Ling Altec, Inc., Oklahoma City, Okla.

Filed Mar. 25, 1970, Ser. No. 22,623

Int. Cl. G01v *1/00*

U.S. Cl. 340—8 R **6 Claims**

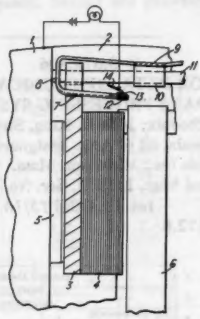


Apparatus for transducing electrical signal energy to acoustic energy for projection within liquid medium. Such speaker device consists of a sealed housing enclosure which is formed of resilient material such that it includes at least one generally planar side, and a permanent magnet cooperating with an electromagnetic drive coil are operatively disposed within said enclosure in suitable affixure to drive the planar side of the housing means so that it acts as the sound producing vibratile member in contact with the liquid medium.

3,670,300
SPOT-TYPE BRAKE WEAR INDICATOR

Otto Depenheuer, Bad Homburg, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Sept. 28, 1970, Ser. No. 76,118
Claims priority, application Germany, Oct. 13, 1969, P 19 51 475.1
Int. Cl. B60t *17/22*; G08b *21/00*
U.S. Cl. 340—52 A 4 Claims

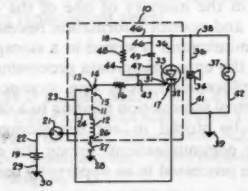


This electrical warning device for indicating brake lining wear includes an electrical circuit which is closed by means of the brake shoe coming into electrical contact with a contact element carried by the brake shoe retaining spring when the brake lining wears down to a predetermined thickness. The contact element is electrically insulated from the retaining spring.

3,670,301
VEHICLE ANTI-THEFT DEVICE

Larry D. Douglas, San Francisco, Calif., assignor to Pete Pakulak and Lucile A. Pakulak, San Francisco, Calif.

Filed Mar. 15, 1971, Ser. No. 124,018
Int. Cl. G08b *13/00*
U.S. Cl. 340—65 7 Claims



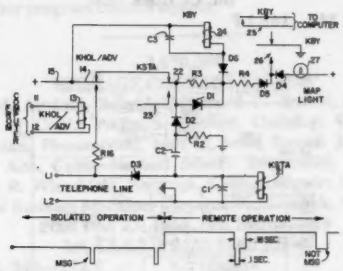
A light-weight portable alarm device is readily installed upon a mobile unit and sounds an alarm for a predetermined time interval in the event that an unauthorized person attempts to move the unit. The alarm is operable whether or not the wires of an associated electrical circuit are cut, and it is insensitive to changes in temperature, atmospheric pressures, moisture, dust or vibration.

3,670,302
CENTRAL TRAFFIC SIGNAL CONTROL

Gregory Siklos, Bronx, and James B. Rudden, Manhattan, both of N.Y., assignors to Marbelite Company, Inc., Brooklyn, N.Y.

Filed Nov. 21, 1969, Ser. No. 878,762
Int. Cl. G08g *1/07*
U.S. Cl. 340—40 5 Claims

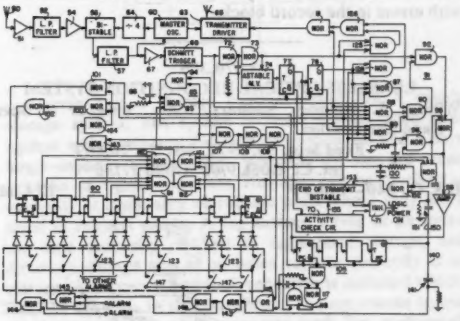
Two lines interconnect a central traffic signal control station with a local control station. The two lines carry signals from the central station to the local station that determines whether the local station is under local or central control. When on central control, the two lines carry signals that cause the traffic signal at the local station to advance to the next condition. In addition, the system includes circuitry that establishes a predetermined interval in which the central station is conditioned to receive signals over the two lines from the local station indicative of a predetermined condition, such as the main thoroughfare signal being green so that a shift between local and central control may be effected without interrupting the smooth flow of traffic during the changeover, and so that central control may continuously monitor the operation of the local control station.



3,670,303
TRANSPONDER MONITORING SYSTEM

John S. Dame, Oak Park, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 28, 1970, Ser. No. 67,875
Int. Cl. G08b *29/00*
U.S. Cl. 340—146.1 C 25 Claims



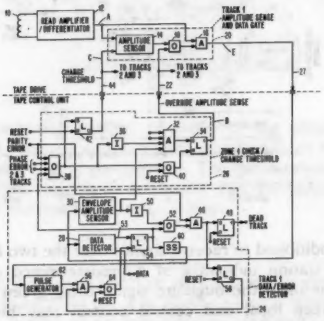
A transponder monitoring system includes a fixed location interrogation station and transponder units carried by vehicles, with the transponder units being placed in an activated transmit mode in response to interrogation pulses transmitted by the interrogation station. The messages received at the interrogation station are verified by the transmission of verification pulses on a bit by bit basis, with failure of verification causing a vehicle transponder unit to be reset to begin transmission over again. This permits an orderly response from the vehicle units to be obtained even though several units may be within the interrogation field at the same time and may be simultaneously attempting to transmit information to the interrogation station. Upon completion of transmission of an error free (verified) message from a transponder, the transponder is disabled from further transmission until the vehicle leaves the interrogation field.

3,670,304

METHOD AND APPARATUS FOR DETECTING ERRORS READ FROM MOVING-MAGNETIC-STORAGE DEVICE WITH DIGITAL INTERFACE

Rolf Andresen, Broomfield; Benjamin C. Fiorino, Longmont, and Fred W. Niccore, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 28, 1970, Ser. No. 76,143
Int. Cl. G06k 5/00
U.S. Cl. 340—146.1 F 16 Claims



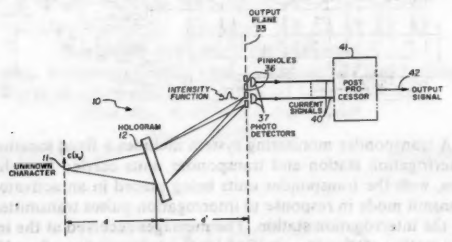
A data signal read from magnetic tape is converted from an analog signal into a digital signal by hard limiting. This hard-limited data signal is combined with an indication as to whether the amplitude of the digital signal is above a predetermined threshold and then passed to the control unit operating with the tape drive. The control unit, in turn, detects the data, checks for parity error, phase error, and amplitude error and provides control signals back to the tape drive. These control signals are used to change the predetermined threshold used by the tape drive. The predetermined threshold is changed by these control signals in accordance with detection of a history of good data and in accordance with errors in the record block.

3,670,305

LENSLESS OPTICAL RECOGNITION SYSTEM

William T. Maloney, Sudbury, Mass., assignor to Sperry Rand Corporation

Filed Sept. 30, 1970, Ser. No. 76,869
Int. Cl. G06k 9/00; G02b 27/38
U.S. Cl. 340—146.3 P 12 Claims



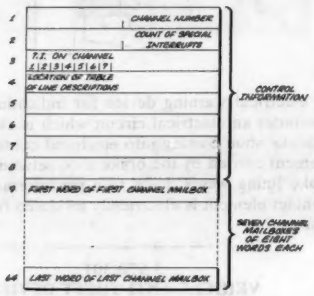
A lensless recognition system including a hologram having interference patterns therein corresponding to known characters. The interference patterns are formed by a character beam which passes through a transparent mask of the character to be recorded and intersects a reference beam on a photographic plate. In the recognition process quasi-monochromatic incoherent illumination from an unknown character transmits through the hologram which is obtained by developing and bleaching the photographic plate. Correlated output signals of varying intensity are formed in the output plane at the locations occupied during the recording process by the transparent masks which most closely correspond to the unknown character. Each of a plurality of pinholes positioned at the locations corresponding to each mask transparency transmits the central value of a correlated output signal. A photodetector aligned with each pinhole senses the transmitted central value and produces a current signal that is processed in a postprocessor to provide an output signal that is indicative of the corresponding known character.

3,670,306

PROCESS FOR DATA COMMUNICATION BETWEEN DATA PROCESSING SYSTEMS

David J. Fox, Phoenix; Jane E. King, Sun City, and Orazio J. Nardelli, Phoenix, all of Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Mar. 1, 1971, Ser. No. 120,021
Int. Cl. G06f 15/16
U.S. Cl. 340—172.5 19 Claims


CHANNEL NUMBER
COUNT OF SPECIAL INTERRUPTS
T.I. ON CHANNEL
LOCATION OF TABLE OF LINE DESCRIPTIONS
CONTROL INFORMATION
FIRST WORD OF FIRST CHANNEL MAILBOX
SEVEN CHANNEL MAILBOXES OF EIGHT WORDS EACH
LAST WORD OF LAST CHANNEL MAILBOX

A process is disclosed which provides for data communication among two or more data processing systems interconnected by a single physical communication channel. A communication is initiated by utilizing one of a plurality of storage areas in the memory of one of the data processing systems. Data and control information necessary for preparing for a communication is stored in a storage area to await processing by the appropriate data processing system. While the control information from one storage area is being processed, control information relating to a different communication may be stored in another storage area. In this manner, many communications among the data processing systems may be processed in an apparently parallel fashion.

3,670,307

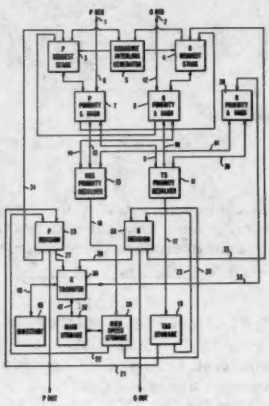
INTERSTORAGE TRANSFER MECHANISM

Richard F. Arnold, Palo Alto, Calif.; Philip S. Dauber, Ossining; Charles V. Freiman, Pleasantville, both of N.Y.; Russel J. Robelen, Palo Alto, and John R. Wierzbicki, Saratoga, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1969, Ser. No. 887,467
Int. Cl. G11c 9/00; G06f 13/00
U.S. Cl. 340—172.5 10 Claims

Described is an interstorage transfer mechanism suitable for use in a storage control system for a two-level storage, wherein the storage system includes a high-speed storage against which requests for data are processed and a slower, larger-capacity main storage. Requests can be received and serviced concurrently at a plurality of request ports in the system where they are buffered in the request stacks. A tag storage serves as an index to the data concurrently resident

in high-speed storage and a directory storage acts as an index to data currently in main storage. Requests for data in each port cause the tag storage to be interrogated to determine whether the desired data is in high-speed storage. If not, then the desired data is retrieved from main storage and placed into high-speed storage by the interstorage transfer mechanism. Priority means for accessing said high-speed storage are provided, said interstorage transfer mechanism being given first priority to access said high-speed and tag storages in case of conflicts in access between said interstorage transfer mechanism and at least one of said plurality of request ports. Means are provided for choosing a



target address in High-speed storage wherein said desired data will be relocated. The tag indexing said target address is updated by said interstorage transfer mechanism to reflect the new data. Means are further provided for invalidating all requests currently in transit at the time said tag is changed to insure data integrity in case said requests refer to old data in said target line. The aforementioned tags contain a bit indicating that the corresponding address in high-speed storage has recently been accessed. Cold generator means are provided for periodically resetting this bit in each tag to mark the corresponding high-speed storage physical address as a candidate for replacement target.

3,670,308

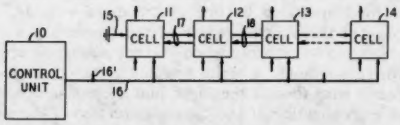
DISTRIBUTED LOGIC MEMORY CELL FOR PARALLEL CELLULAR-LOGIC PROCESSOR

David Morris Tutelman, Eatontown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 24, 1970, Ser. No. 101,311

Int. Cl. G06f *13/00, 15/16*

U.S. Cl. 340—172.5 **21 Claims**



In a parallel cellular logic processor including a program control unit and a plurality of logic memory cells, all data inputs, except intercell inputs, for any cell are channeled through common input coupling logic to a one-bit intracell bus. The coupling logic is enabled or disabled in accordance with predetermined combinations of states of program control signals and of a plurality of control flip-flop circuits within the cell. Those flip-flop circuits receive data signal inputs from the bus. The same bus also provides data inputs for a data flip-flop circuit and for a data store within the cell. Data input to the bus is provided by way of the coupling logic from a program-selected one of the data flip-flop circuit, the store, an external source, or from program. Additional logic allows communication among cells by way of selective interconnection of their respective intracell buses as determined by further program control signals.

3,670,309

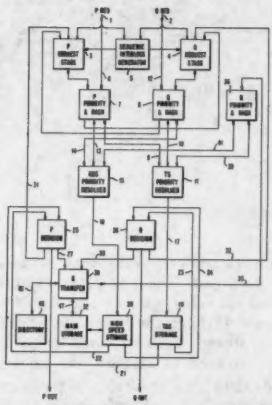
STORAGE CONTROL SYSTEM

Gene M. Amdahl, Saratoga; Richard F. Arnold, Palo Alto, both of Calif.; Philip S. Dauber, Ossining; Charles V. Freiman, Pleasantville, both of N.Y.; Russell J. Robelen, Palo Alto, Calif.; Herbert Schorr, Briar Cliff, N.Y., and John R. Wierzbicki, Saratoga, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1969, Ser. No. 887,469

Int. Cl. G11c *9/00;* **G06f** *13/00*

U.S. Cl. 340—172.5 **29 Claims**



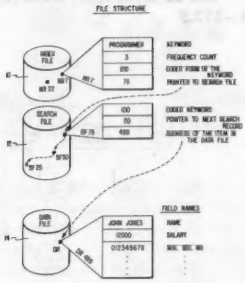
Described is a storage control system for a two-level storage system. The system includes a high-speed storage against which requests for data are processed and a slower, larger-capacity main storage. Requests for data are received in terms of logical addresses. Requests can be received concurrently at a plurality of request ports where they are buffered in request stacks. A tag storage serves as an index to the data currently resident in high-speed storage, and a directory storage acts as an index to data currently in main storage. A sequence interlock generator is included which interlocks requests in the plurality of request stacks to insure that requests to the same storage area are performed in proper sequence to insure data integrity. When a request is serviced, the logical address is transformed into a plurality of physical addresses in high-speed storage. The corresponding tags from the tag storage and the corresponding data from the high-speed storage are concurrently fetched. A comparison is made of the tags with the transformed address to determine whether the requested data is in high-speed storage. Since request to the same storage entity in high-speed storage or tag storage can be made concurrently by all request ports, conflict resolvers are included to resolve conflicts arising from simultaneous requests to either of these two storages. High-speed storage is divided into storage modules capable of simultaneous operation such that requests from the plurality of request ports can be serviced concurrently. If comparison of the tags indicate that the requested data is available, the request is serviced. An in-

terstorage transfer mechanism is included such that if the requested data is not available in high-speed storage, then the data is retrieved from main storage and placed into high-speed storage for subsequent processing of the request. Concurrently with interstorage transfer, processing of other requests from the request ports is permissible. In the replacement of data from main storage to high-speed storage, provision is made for also replacing data from high-speed storage to main storage if such be necessary.

3,670,310
METHOD FOR INFORMATION STORAGE AND RETRIEVAL

Bansi U. Bharwani, Rochester, N.Y., and Harry Kaplowitz, Annandale, Va., assignors to Infodata Systems Incorporated, Webster, N.Y.

Filed Sept. 16, 1970, Ser. No. 72,953
Int. Cl. G06f *7/10*
U.S. Cl. 340—172.5 **22 Claims**



A data storage and retrieval system based upon a three file concept is disclosed. The computer oriented system comprises at least an index, search, and data file. Access to the file structure is through the index file wherein a plurality of keywords are stored. Each keyword, either individually or in combination, is used to identify one or more data records stored in the data file. A plurality of paths through the search file, called chains, whose links comprise links addresses, provide a connection between the index and data files.

Keywords are automatically generated from field values contained in data records. Updating of these field values initiates the automatic updating of keywords in the index and search files.

In addition, to conserve file space, the allocation of space for keywords in the index file is made adjustable.

Provision is made for marking items as deleted and for bypassing deleted items during searching.

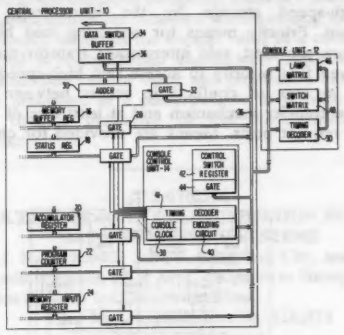
Provision is also made for the addition of a single item as a data record without using the loading procedure used to initially load the data base.

3,670,311
DATA PROCESSOR CONSOLE COMMUNICATIONS SYSTEM

Frederick C. Aumann, III, Chelmsford, Mass., and Gerald V. Butler, Jr., Whittier, Calif., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Nov. 19, 1970, Ser. No. 91,132
Int. Cl. G06f *3/14;* **H04q** *11/00*
U.S. Cl. 340—172.5 **11 Claims**

A data processing system which multiplexes signals between the central processing unit and a console unit over a single set of conductors. Sets of indicating lamps and switches in the console unit correspond to storage units in the central processor unit. Selector circuits respond to recurring sequential gating signals to connect each storage unit to its corresponding row of switches or indicating lamps repeatedly in sequence over the conductors. Persistence causes

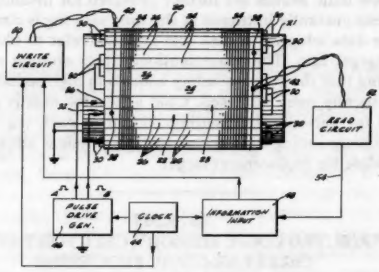


the lamps to continuously display the contents of the corresponding storage units while the switches alter the contents in the storage units intermittently connected to them.

3,670,312
WRITE STATION FOR A MAGNETIC STORAGE MEDIUM

Berne D. Broadbent, Orange, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 30, 1970, Ser. No. 85,597
Int. Cl. G11c *19/00, 11/04, 11/14*
U.S. Cl. 340—174 SR **21 Claims**



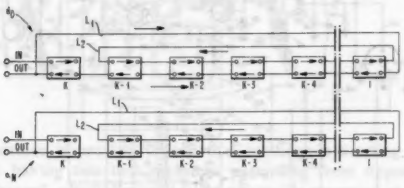
A magnetic shift register including a fine magnetic wire recording medium, the wire being wound under tension in a helix around a substrate including a cylindrically disposed polyphase advance array which includes a plurality of drive windings oriented transverse to the axis of the magnetic wire so that a series of spaced magnetic domains, sequentially formed at the input end segment of the magnetic wire by a drive field produced by one of the drive winding, can be propagated through the length of the magnetic wire by the polyphase advance array when current pulses are applied to the drive windings. A write winding fastened adjacent the magnetic wire toward the input end thereof can selectively impede propagation of and cause destruction of the magnetic domain in selected storage segments. A read winding disposed toward the output end of the magnetic wire senses magnetic domains propagated therethrough past the write winding such that the absence of a magnetic domain from a spaced storage segment of the magnetic wire represents a digital ZERO and the presence of a magnetic domain represents a digital ONE.

3,670,313

DYNAMICALLY ORDERED MAGNETIC BUBBLE SHIFT REGISTER MEMORY

William F. Beausoleil, Poughkeepsie; David T. Brown, and Ernest L. Walker, both of Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 22, 1971, Ser. No. 126,822
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 TF 8 Claims



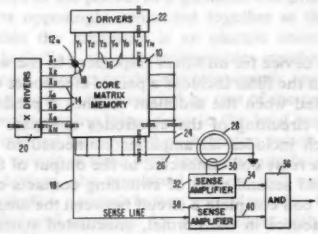
This specification discloses a bubble domain memory in which data is arranged for immediacy of access in accordance with its last use. The memory comprises a plurality of parallel shift registers in which data can be accessed in parallel. In other words, each of the shift registers contains a bit of a page or word so that by the performance of one shifting operation all of the bits of the page or word can be accessed. Data in each shift register is arranged in its order of last use so that the access position K of a shift register having K bit positions contains the last bit of information used and the position K−1 preceding the access position K in the shift register contains the bit of data used just previously to the data in the access position K and so on. In these shift registers the shift positions are arranged in loops for shifting the data between the positions of the shift register. Two such loops are provided, one of the loops contains all the shift positions so that data in any position in the shift register can be shifted into the access position K of the register for reading or writing. The other loop contains all the positions of the shift register but the access position K. This second loop is for reordering the data in the shift register in order of last use after data has been shifted into the access position K for reading or writing by the first loop.

3,670,314

READ GATING CIRCUIT FOR CORE SENSING

Lawrence A. Tate, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, New York, N.Y.

Filed June 14, 1960, Ser. No. 35,994
Int. Cl. G11c *5/08, 11/06*
U.S. Cl. 340—174 RC 32 Claims



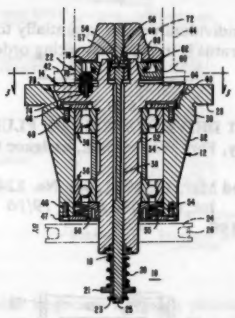
An information storage matrix, such as an array of magnetic cores, is provided with a separate reference storage device which is driven by the same read-out driver as the array. The reference read-out signal and the information signals are sensed and applied to a gating means, such as an AND gate, which operates only on the coincidence of the reference and information signals, thereby eliminating stray noise in the output.

3,670,315

MAGNETIC DISK MEMORY SPINDLE ASSEMBLY

Robert R. Fowler, 10625 Northridge Hill Drive, Chatsworth, Calif.

Filed May 14, 1970, Ser. No. 37,235
Int. Cl. G01d *15/28*
U.S. Cl. 340—174.1 C 9 Claims



A spindle assembly provides orthogonal reference surfaces for receiving an annular mounting member for a memory disk assembly having corresponding orthogonal reference surfaces disposed about a central axis. A spindle having a central bore concentric with a central axis turns within a housing on widely spaced bearings. The spindle includes an annular reference surface perpendicular to the central axis and a conical surface concentric with the central axis. A segmented collet has an internal conical surface mating with the conical surface of the spindle as well as a cylindrical reference surface which is orthogonal to the first reference surface and concentric with the central axis. Pins transmit rotational force from the spindle to the collet, and a cage holds the collet against the spindle. A drawbar extends from the cage through the central bore of the spindle and controls movement of the cage, thereby allowing the disk assembly to be selectively engaged or disengaged. The assembly combines stable operation with economy and ease of manufacture.

3,670,316

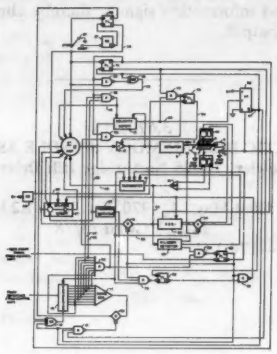
CONTROL FOR DISC DRIVE APPARATUS

Richard D. Matthews; Martin O. Halfhill; Frank J. Sordello, and Harold S. Yang, all of San Jose, Calif., assignors to Information Storage Systems, Inc., Cupertino, Calif.

Filed Aug. 24, 1970, Ser. No. 66,526
Int. Cl. G11b *5/58, 5/82*
U.S. Cl. 340—174.1 C 7 Claims

A disc drive control for a disc drive apparatus, which con-

trol, during each power-on sequence, tests the various control functions individually and sequentially to ascertain if the disc drive apparatus is in proper working order.

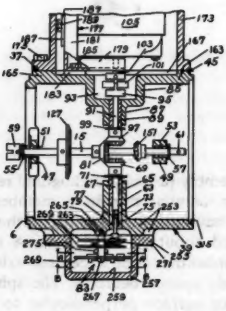


3,670,317

INSTRUMENT DRIVE SYSTEM FOR FLUID METERING

Lester R. Overy, Fort Wayne, Ind., assignor to Tokheim Corporation

Filed Mar. 16, 1971, Ser. No. 124,844
Int. Cl. G08c *19/48, 19/16*
U.S. Cl. 340—198 **20 Claims**



The invention relates to an improvement in a fluid metering apparatus which, in the prior art, commonly comprises three or more elements mounted together in stacked, interfitting relationship, wherein the lowermost element is a meter having an output shaft, wherein the intermediate element or elements have input and output shaft means, wherein the uppermost element has at least an input shaft and wherein the input shaft of each element is coupled with the output shaft means of the subjacent element.

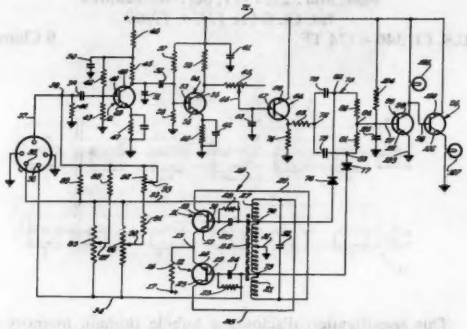
3,670,318

LOAD CELL OUTPUT CIRCUIT

George H. Fathauer, Decatur, Ill., assignor to Eaton Yale & Towne Inc., Morton Grove, Ill.

Filed July 7, 1969, Ser. No. 839,289
Int. Cl. G08c *19/00*
U.S. Cl. 340—199 **5 Claims**

A load weighing system including an oscillator for supplying a signal to a load cell and at the same time supplying a like signal to a phase detector circuit. The output of the load cell is coupled through an amplifier to the input of the phase detector circuit, and changes in loading on the cell produce a linearly increasing signal at the output of the phase detector circuit for triggering a meter device or the like. Spurious signals including signals of the operating frequency or of incorrect phase are nullified in the phase detector circuit and accordingly do not trigger the metering circuit. The metering



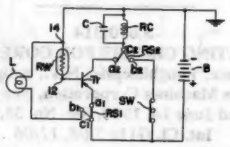
circuit may include a pair of transistors connected in parallel so that both of the transistors conduct equally when a null condition is received at the output of the load cell. This equal conduction is then measured by means of lamps or the like which may be connected in series with each of the transistors.

3,670,319

ELECTRICAL ALARM DEVICE FOR OIL FILTERS RESPONSIVE TO WATER SEDIMENT LEVEL

Yoshio Ohtani, Higashi-Matsuyama, Japan, assignor to Diesel Kiki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 7, 1970, Ser. No. 62,049
Int. Cl. G08b *21/00;* **F01m** *11/10*
U.S. Cl. 340—244 C **2 Claims**

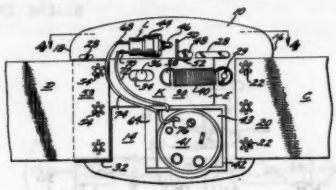


An alarm device for oil filters responsive to the water sediment level in the filter includes a pair of electrodes which are short-circuited when the sediment reaches a predetermined level. Short-circuiting of the electrodes energizes an alarm circuit which includes an amplifier connected to the electrodes and a relay coil connected to the output of the amplifier. First and second pairs of switching contacts controlled by the relay coil complete a circuit between the amplifier and coil and a source in the normal, unactuated states thereof. These contacts, when actuated responsive to energization of the relay coil, complete a circuit to an indicating device and to a reset switch and break the circuit between the coil and amplifier. Opening of the reset switch de-actuates the switching contacts.

3,670,320
POSTURE IMPROVING DEVICE

Robert D. Palmer, 6475 Bayard, Long Beach, Calif.

Filed July 6, 1970, Ser. No. 52,172
Int. Cl. G08b 3/00
U.S. Cl. 340—279 1 Claim

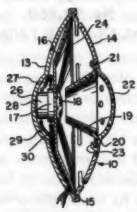


A posture improving device that includes a housing assembly having two belt segments extending from opposite sides thereof, which device may be adjustably mounted to encircle the waist of a user when he is standing with correct posture and with his stomach muscles taut. The device lightly contacts the waist portion of the user when he is so standing, but upon the user assuming an incorrect posture in which his stomach muscles are allowed to sag, additional tension is placed on the belt segments that results in an electric circuit being completed within the housing to actuate a buzzer or other sound reproducing device to warn the user that his posture is incorrect. The device is compact, light in weight and may be worn by a user without the device being conspicuous.

3,670,321
POCKET NOISE MAKING AND ALARM DEVICE

Savas P. Savides, 92-09 Rockaway Boulevard, Rockaway Beach, N.Y.

Filed Nov. 12, 1970, Ser. No. 88,675
Int. Cl. G08b 3/10
U.S. Cl. 340—384 3 Claims

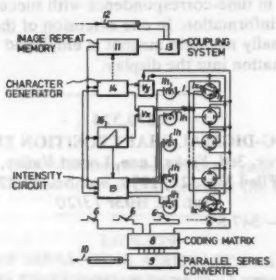


A personal noise making and alarm signal device which can be worn in the pocket of a garment, comprising two concave parts opposingly connected together at their peripheries. Within the enclosure is an electric sound producing device, including an electromagnetic speaker, sounding board means carried by the electromagnetic speaker and by one of the parts, a cone carried by one of the parts and having its small opening lying close to the loud speaker device and a combined battery and push button switch device connected in circuit relation with the sound producing and loud speaker devices, the combined battery and switch contact device including a switch button unit adapted to be alternately extended and retracted for engagement with the battery contacts or disengagement of the battery contacts. A combined battery and switch may be confined within the enclosure or may be a separate unit and wired to the sound producing and loud speaker device. When the combined battery and switch device is disposed in the enclosure an enlarged cover member engages the switch button and is spring biased from a partition wall toward a retaining ring secured in an enlarged opening in one of the parts. A plug outlet is provided on the enclosure parts to supply a separate combined battery and push button unit to effect operation of the unit separate and apart from the sound producing and loud speaking unit.

3,670,322
PROGRAMMABLE KEYBOARD

Rainer Mallebrein, Singen, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Germany

Filed Aug. 17, 1970, Ser. No. 64,439
Claims priority, application Germany, Aug. 16, 1969, P 19 41 671.8
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A 10 Claims

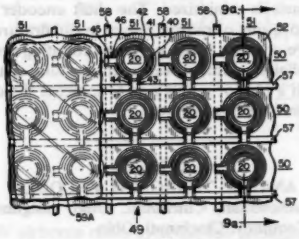


A programmable keyboard having a plurality of information input elements constituted by small cathode-ray tubes connected to present a display of the type of information to which they relate.

3,670,323
IMAGE-DISPLAY DEVICES COMPRISING PARTICLE LIGHT MODULATORS WITH STORAGE

Alan Sobel, and Joseph Markin, both of Evanston, Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Dec. 14, 1970, Ser. No. 97,867
Int. Cl. G02f 1/30
U.S. Cl. 340—324 R 21 Claims



An image-display panel is composed of horizontal rows and vertical columns of illumination-control cells, each of which includes anisometric particles of suspended magnetic material that normally obstruct light but become oriented to pass light in response to the application of a magnetic field. Individually associated with different cells are a plurality of magnetic storage elements that effect control of the application of the fields to the cells. A like plurality of magnetic-field-producing devices are individually associated with

respective cells and storage elements. In response to vertical synchronizing signals, conditioning pulses are selectively applied to respective rows of the field-producing devices in order to create in the corresponding storage elements respective field components of magnitudes insufficient to orient the particles in the associated cells for light control. In response to horizontal synchronizing signals, control pulses are selectively applied to respective columns of the field-producing devices in order to create, in the corresponding storage elements, respective field components of magnitudes sufficient, together with the respective field components created in response to the conditioning pulses, to establish in the respective cells resultant fields sufficient to orient the affected particles for light control. At the same time, the amplitude of the conditioning or control pulses is modulated by video signals so that the total magnitude of each of the resultant fields is proportional to the instantaneous video level. The storage elements thereafter serve to maintain orientation of the particles until, finally, in response to synchronizing signals, the storage elements are periodically de-activated in time-correspondence with successive intervals of the video information. In one extension of the basic disclosure, a manually movable magnet is employed to write additional information into the display.

3,670,324

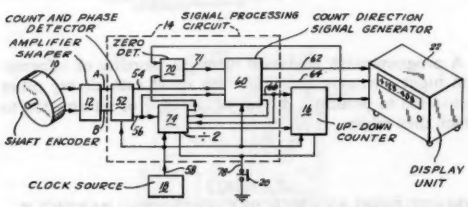
ANALOG-DIGITAL SHAFT POSITION ENCODER

John B. Trevor, 3rd, Feeks Lane, Locust Valley, N.Y.

Filed Mar. 27, 1970, Ser. No. 23,270

Int. Cl. H03r *13/20*

U.S. Cl. 340—347 SY **10 Claims**



Encoding equipment in which the output signals of a position encoder such as a shaft position encoder are sampled for counting only during a short sampling period in each cycle of the output signals. The sampling period is determined by a signal from a clock source, and the clock source is used to synchronize the operation of the entire counting system. Thus, the chances that spurious counts will be created by spurious signals is minimized. The shaft encoder preferably produces two trains of output pulses in quadrature. The output pulses are counted by an up-down counting system which displays a digital number representing the shaft position together with a plus or minus sign to indicate the direction in which the shaft has been rotated.

3,670,325

ANALOG TO DIGITAL ENCODER

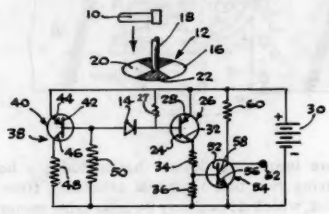
Yervand Mathevosian, Cincinnati, Ohio, assignor to D. H. Baldwin Company, Cincinnati, Ohio

Filed May 4, 1970, Ser. No. 34,501

Int. Cl. G08c *9/06*

U.S. Cl. 340—347 P **11 Claims**

A photoresponsive device employing a silicon photocell to excite on illumination of the photocell, a transistor in a discriminator circuit and drive the transistor from a non-conducting to a conducting condition. The photovoltaic output of the silicon photodiode is added to the direct current potential of a bias source to exceed the threshold conduction potential of the discriminator transistor. Thermal stability is achieved by employing a transistor in the bias source of identical type and similar characteristics to the discriminator transistor. The discriminator transistor has an emitter-collector circuit which includes a load resistor, and the output which is developed across the load resistor is amplified by a common emitter transistor amplifier circuit. The transistor of the amplifier circuit is an N-P-N type, while the transistor of the discriminator circuit is a P-N-P type. In addition to employing a bias source responsive to ambient temperature, a second bias source is used to reduce the collector-emitter potential of the discriminator transistor responsive to temperature increases. The second bias source utilizes a thermistor in addition to the emitter-collector potential of a bias supply transistor in order to compensate for the nonlinear temperature-output characteristics of silicon photodiodes.



3,670,326

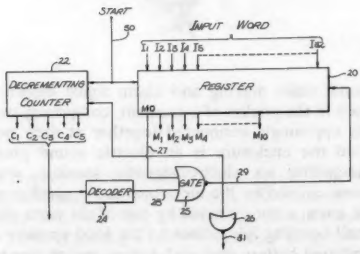
DIGITAL TO LOG-ANALOG CONVERTER

Edwin A. Sloane, Los Altos, and Lee E. Scaggs, Mountain View, both of Calif., assignors to Time/Data Corporation, Palo Alto, Calif.

Continuation-in-part of application Ser. No. 775,216, Sept. 3, 1968, now abandoned. This application Nov. 23, 1970, Ser. No. 91,860

Int. Cl. H03k *13/04*

U.S. Cl. 340—347 DA **10 Claims**

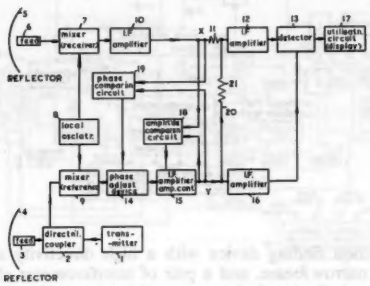


A system for converting digital information into logarithmic (log) analog form is disclosed. The characteristic and mantissa for each converted digital work are determined separately and then summed. The characteristic and mantissa are determined utilizing a linear, resistive network.

3,670,327
CONTINUOUS WAVE RADAR SYSTEMS

John Dickens Clare, and Stanley Bruce Marsh, both of Malvern, England, assignors to Minister of Supply in Her Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Nov. 1, 1956, Ser. No. 619,904
Int. Cl. G01s 9/44
U.S. Cl. 343—8 1 Claim



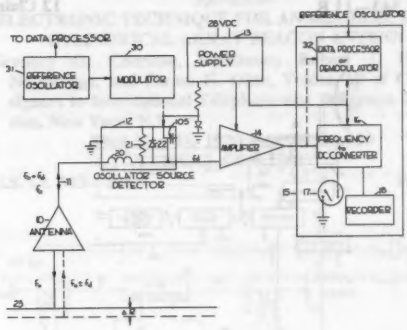
1. A continuous wave radar system comprising a transmitting channel and a receiving channel, a first heterodying means included in said receiving channel to convert the received signal to an intermediate frequency, a reference signal channel including a second heterodyning means coupled to said transmitting channel for converting a portion of the transmitted signal to an intermediate frequency, phase comparison means coupled to the intermediate frequency outputs of said receiving and said reference channels for producing an output proportional to the phase relationship between the channels, phase adjusting means included in said reference channel and coupled to said phase comparison means for maintaining a fixed phase relationship between channels, amplitude comparison means coupled to the intermediate frequency outputs of said receiving and said reference channels, amplitude adjusting means included in said reference channel and coupled to said amplitude comparison means for maintaining a fixed amplitude relationship between said channels, circuit means for applying a portion of said reference signal to said receiving channel in opposition to cancel the noise component of said received signal, a detector coupled to said receiver channel and to said reference channel to provide an output proportional to the doppler frequency difference between the received signal and the reference signal.

3,670,328
TUNNEL DIODE MOVEMENT DETECTOR

Austin Mardon, Santa Barbara, and Robert N. Nielsen, Jr., Woodland Hills, both of Calif., assignors to American Nucleonics Corporation, Glendale, Calif.

Filed Nov. 29, 1968, Ser. No. 785,005
Int. Cl. G01s 9/46, 9/50
U.S. Cl. 343—8 8 Claims

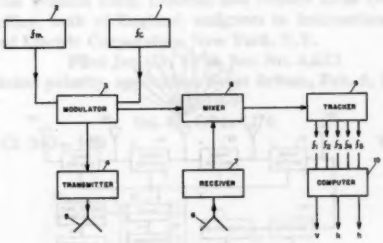
This disclosure involves a radar system designed primarily to give an indication whenever the relative distance between the source of electromagnetic energy and the reflecting surface changes. It is particularly adaptable for use in indicating the sink or climb rate of an aircraft alternatively in indicating the opening or closing rate as required in avoidance systems. It employs a single antenna and a single active RF element; the former constitutes simultaneously the transmitting and receiving antenna and the latter active RF element constitutes both the radio frequency energy generator for the system and the receiver down-converter for the system.



3,670,329
METHOD OF MEASURING AIRCRAFT PARAMETERS USING DOPPLER TECHNIQUES AND ALTITUDE HOLES

Keith C. M. Glegg, Montreal, Quebec; John F. Haberl, Pointe Claire, Quebec; Hans W. Baumans, Montreal, Quebec; Rein Piibe, Dollard des Ormeaux, Quebec, all of Canada, assignors to Canadian Marconi Company, Montreal, Quebec, Canada

Filed Oct. 5, 1970, Ser. No. 77,803
Int. Cl. G01s 9/46
U.S. Cl. 343—9 4 Claims

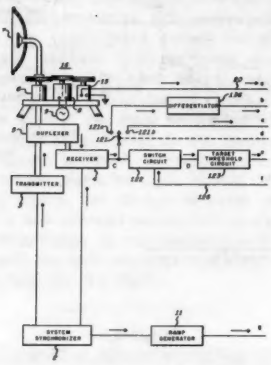


In FM/CW airborne radar systems, the presence of altitude holes at multiples of half the wavelength of the modulating frequency has presented problems in that these altitude holes represent "blind" spots. In accordance with the invention, it has been discovered that these altitude holes can be used to advantage by detecting the Doppler shifts associated with several altitude holes and using the data thus obtained to solve a like number of simultaneous equations, and to thereby obtain aircraft flight parameters. The disclosure treats of the theory behind the invention and describes, in general terms, a system for detecting altitude holes and the Doppler shifts associated therewith.

3,670,330
RADAR COLLISION AVOIDANCE INDICATOR

Robert F. Riggs, Charlottesville, Va., assignor to Sperry Rand Corporation

Filed July 6, 1970, Ser. No. 52,329
Int. Cl. G01s 7/12
U.S. Cl. 343—11 R 12 Claims

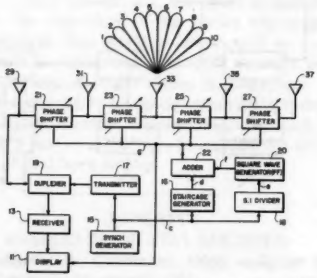


A collision warning and collision avoidance radar navigation system employs combined modified tau-proximity collision warning criteria to derive an improved presentation on a radar plan position cathode ray indicator. An intruding target is labelled dangerous if the target is below a predetermined range or if the ratio of intruder closing range to his range rate is less than a predetermined value.

3,670,331
SCANNING MEANS AND METHOD FOR SEARCH RADAR

Otto E. Rittenbach, Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed July 16, 1970, Ser. No. 55,499
Int. Cl. G01s 9/06
U.S. Cl. 343—11 R 8 Claims

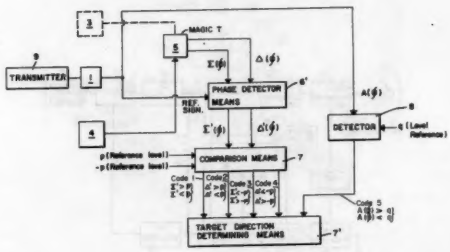


According to this invention, an electronically scanned radar antenna array is rapidly scanned over a plurality of adjacent beam positions, to avoid the possibility of fast-moving targets escaping detection. The radar PRF is increased to yield the same unambiguous range and target echo sensitivity compared to a slow-scan system. In a modification of this concept, rapid interlaced scanning is provided to reduce the probability of second-time-around echoes entering adjacent beam positions.

3,670,332
DIRECTION FINDING DEVICE

Ronald Blommendaal, Noordwijk, Netherlands, assignor to Christiaan Huygenslaboratorium N. V., Noordwijk, Netherlands

Filed Sept. 10, 1969, Ser. No. 856,859
Claims priority, application Netherlands, Sept. 19, 1968, 6812918
Int. Cl. G01s 9/02
U.S. Cl. 343—16 R 6 Claims

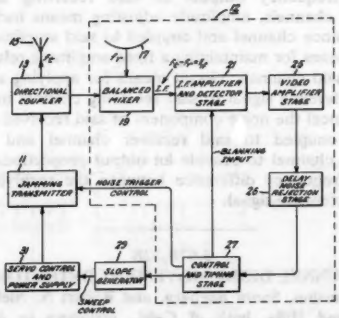


Direction finding device with a high directivity antenna with a narrow beam, and a pair of interferometer elements with a periodical radiation pattern. The signals obtained from the high directivity antenna and the interferometer elements respectively are compared in such a way, that by means of the comparison results a distinction can be made between signal sources in different sectors of the beam of the high directivity antenna.

3,670,333
AUTOMATIC SWEEP ELECTRONIC COUNTERMEASURES SYSTEM

Oliver H. Winn, Whitesboro, N.Y., assignor to General Electric Company

Filed Apr. 27, 1960, Ser. No. 25,165
Int. Cl. H04k 3/00
U.S. Cl. 343—18 E 6 Claims



1. An automatic sweep jamming system having a high duty cycle and rapid acquisition rate for jamming victim transmission systems comprising transmitter means capable of being swept very rapidly over a prescribed frequency spectrum for radiating electromagnetic energy, tuning control means coupled to said transmitter for sweeping said spectrum repetitively, receiver means capable of rapidly sweeping said prescribed frequency spectrum to detect electromagnetic energy from victim transmission systems, and means includ-

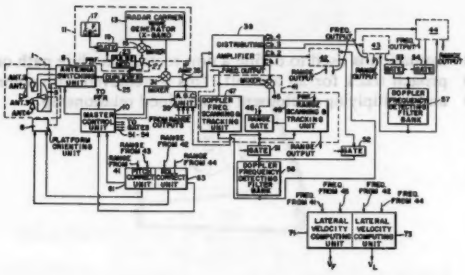
ing said transmitter, said tuning control means and receiver means for automatically reducing the sweep rate of said transmitter means for a predetermined period in response to detection of victim electromagnetic energy.

3,670,334

ATTITUDE CONTROL SYSTEM

Alfred F. Gaheen, Jr., Glen Burnie, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 24, 1969, Ser. No. 809,779
Int. Cl. G01s 9/02, 9/44
U.S. Cl. 343—7.4 2 Claims



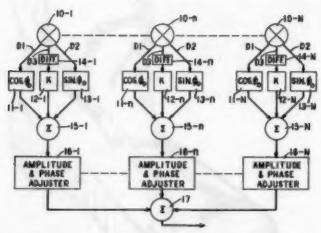
A radar system for use on an aircraft or spacecraft for determining and controlling the attitude of the system antenna or of the craft, the system including an antenna unit producing four equiangularly spaced beams each of which is angularly offset by a substantial amount from a center reference axis, and means for applying radar pulse signals to each beam in succession and for deriving, from the received pulses returning from the ground, range and velocity information which is employed for orienting the antenna unit or the craft on which the system is mounted so as to impart a vertical orientation to the antenna system reference axis.

3,670,335

ARRAYS WITH NULLS STEERED INDEPENDENTLY OF MAIN BEAM

Peter Hirsch, Parsippany, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 8, 1967, Ser. No. 644,539
Int. Cl. H01q 3/26
U.S. Cl. 343—100 SA 6 Claims



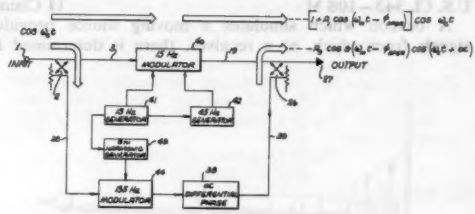
The directions of selected nulls in the characteristic pattern of an array of signal converting elements are controlled independently of the direction of the main beam of this pattern and substantially independently of the strength of the main beam. This is done by constructing each signal converting element either of two mutually perpendicular dipole transducers and an omnidirectional transducer, or their equivalent. Array nulls are then rotated independently of the main beam by varying the relative weights given to the signals associated with the transducers comprising each element.

3,670,336

ELECTRONIC TECHNIQUE FOR AN ALL-ELECTRONIC CYLINDRICAL ARRAY BEACON ANTENNA

Gregory G. Charlton, Calabasas; Robert J. Hanratty, Northridge, and Hiram H. Ohta, Venice, all of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 11, 1970, Ser. No. 36,050
Int. Cl. G01s 1/44
U.S. Cl. 343—106 10 Claims



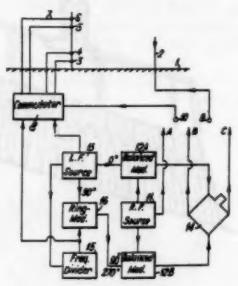
A system for generating the amplitude modulation functions to apply to the individual columns of radiating elements in a cylindrical array antenna for the TACAN system. Two harmonically related low frequency modulation waveforms are contemplated, and means are provided for adjusting the radio-frequency phase of the higher of these two aperture excitation components relative to the RF phase of the carrier component. The result is broadening of the "operating lobe" of the modulation pattern, permitting operation over a broader band of frequencies and a wider range of elevation angles in a cylindrical array of moderate size.

3,670,337

RADIO NAVIGATION BEACON UTILIZING A COMMUTATOR WHICH SUPPLIES RADIO FREQUENCY IN SUCCESSION TO SEVERAL AERIALS

Charles William Earp, London, and Francis Giles Overbury, Cuffley, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 21, 1970, Ser. No. 4,653
Claims priority, application Great Britain, Feb. 5, 1969, 6,157/69
Int. Cl. G01s 1/16
U.S. Cl. 343—108 8 Claims



A radio navigation beacon is provided having a linear array of equally spaced aerials and means which commutate radio-

frequency to each said aerial in succession so as to produce bi-directional constant-velocity scanning of the array. Further means including an aerial for radiating radio-frequency energy of a frequency which differs by a fixed amount from the radio frequency which is commutated to the array. The sign of frequency difference is changed at each half period of commutation to the array.

3,670,338

RADIO NAVIGATION RECEIVING EQUIPMENT

Charles William Earp, Hampstead, London, England, assignor to International Standard Electric Corporation, New York, N.Y.

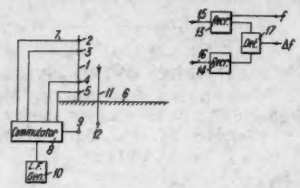
Filed Feb. 9, 1970, Ser. No. 9,802

Claims priority, application Great Britain, Mar. 7, 1969, 12,225/69

Int. Cl. G01s *1/40*

U.S. Cl. 343—108 M **11 Claims**

A beacon which simulates a moving source provides signals from which, at a receiver, there is determined in terms of frequency the distance and angle of elevation from the receiver to the beacon. In the receiver, the frequency in-

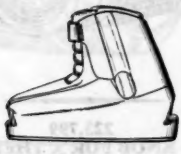


formation is used to define a non-rectilinear glide path or approach track for an aircraft. This is achieved with summing and multiplying equipment in a defined relationship.

DESIGNS

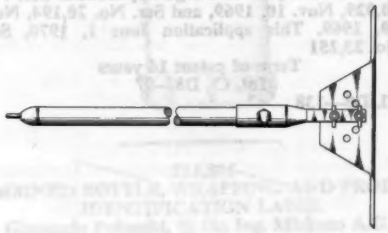
JUNE 13, 1972

223,791
SKI-SHOE
Jean-Louis Barrault, Paris, France, assignor to Le Trappeur Sillans, Isere, France
Filed Aug. 20, 1970, Ser. No. 24,603
Claims priority, application France May 5, 1970
Term of patent 7 years
Int. Cl. D2—*04*
U.S. Cl. D2—276

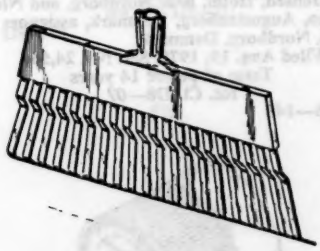


223,792
FISHERMAN'S SHOE
Leon L. Martuch, Midland, Mich., assignor to Scientific Anglers Inc., Midland, Mich.
Filed Jan. 30, 1970, Ser. No. 21,155
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—310

223,793
COMBINATION HOE, CUTTER AND EDGER FOR GARDENING
Angelo De Feo, Jr., 664 Riverview Drive, Totowa Borough, N.J. 07512
Filed Dec. 26, 1967, Ser. No. 9,909
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—11

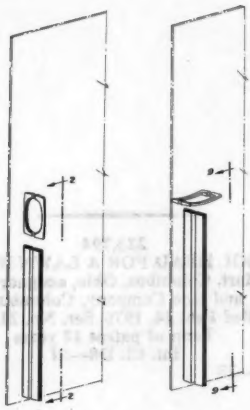


223,794
TOOL HEAD FOR A LAWN RAKE
Walter R. Hart, Columbus, Ohio, assignor to The Union Fork and Hoe Company, Columbus, Ohio
Filed Feb. 24, 1970, Ser. No. 21,582
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—13



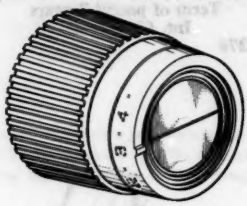
223,795
BLADE HOLDER
Laird F. Covey, Easton, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Oct. 12, 1970, Ser. No. 25,428
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—107

223,796
COMBINED DOOR HANDLE AND LOCK HOUSING SET
William J. Horgan, Jr., Allegheny County, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.
Continuation-in-part of design applications Ser. No. 20,029, Nov. 10, 1969, and Ser. No. 20,194, Nov. 20, 1969. This application June 1, 1970, Ser. No. 23,251
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—138

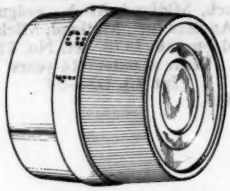


223,797
CONTROL KNOB FOR A THERMOSTATIC VALVE OR THE LIKE
Jens E. G. Jensen, Holm, near Nordborg, and Niels P. G. Graversen, Augustenborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark
Filed Aug. 19, 1970, Ser. No. 24,566
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—140

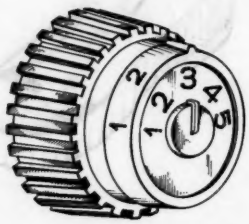
223,798
CONTROL KNOB FOR A THERMOSTATIC VALVE OR THE LIKE
Jens E. G. Jensen, Holm, near Nordborg, and Niels P. G. Graversen, Augustenborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark
Filed Aug. 19, 1970, Ser. No. 24,569
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—140



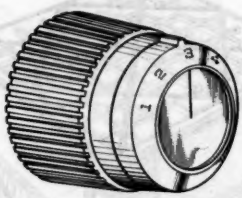
223,799
CONTROL KNOB FOR A THERMOSTATIC VALVE OR THE LIKE
Jens E. G. Jensen, Holm, near Nordborg, and Niels P. G. Graversen, Augustenborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark
Filed Aug. 19, 1970, Ser. No. 24,572
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—140



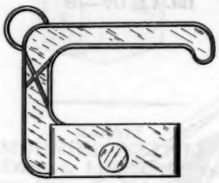
223,800
CONTROL KNOB FOR A THERMOSTATIC VALVE OR THE LIKE
Jens E. G. Jensen, Holm, near Nordborg, and Niels P. G. Graversen, Augustenborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark
Filed Aug. 19, 1970, Ser. No. 24,565
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—142



223,801
CONTROL KNOB FOR A THERMOSTATIC VALVE OR THE LIKE
Jens E. G. Jensen, Holm, near Nordborg, and Niels P. G. Graversen, Augustenborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark
Filed Aug. 19, 1970, Ser. No. 24,571
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—142



223,802
CARRIER HANDLE FOR GARMENT HANGERS
James A. Belland, 310 Wildwood Road, Willernie, Minn. 53090; and Eugene Brown, 2600 Mayfair Ave.; and David De Wuske, 103 Wildwood Road, both of White Bear Lake, Minn. 53090
Filed Dec. 14, 1970, Ser. No. 26,446
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—154



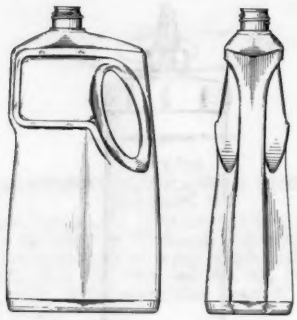
223,803
SUPPORT FOR REINFORCING ROD
Harold A. Lichnecker, 12808 Nutwood St., Garden Grove, Calif. 92640
Filed Oct. 28, 1970, Ser. No. 25,692
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—228

223,804
BOTTLE OR THE LIKE
Edwin F. Kusek, Norwalk, Conn., assignor to Borden, Inc., Columbus, Ohio
Filed Sept. 24, 1970, Ser. No. 25,185
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—2

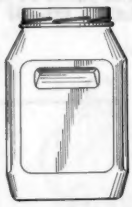
223,805
COMBINED BOTTLE, WRAPPING AND PRODUCT IDENTIFICATION LABEL
Giancarlo Polenghi, % Dr. Ing. Misitano A.G., 217 Via Padova, 20127 Milan, Italy
Filed July 16, 1970, Ser. No. 24,004
Claims priority, application Italy May 29, 1970
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—10

223,806
JUG OR SIMILAR ARTICLE
Ted L. Beaver, Roselle, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Jan. 4, 1971, Ser. No. 103,937
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—40

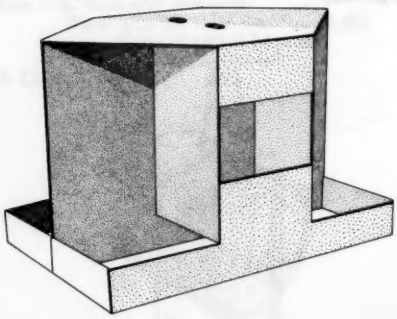
223,807
BOTTLE OR SIMILAR ARTICLE
Ernest F. Thomson, Fairfield, Conn., assignor to Lever Brothers Company, New York, N.Y.
Filed Feb. 9, 1971, Ser. No. 114,103
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—42



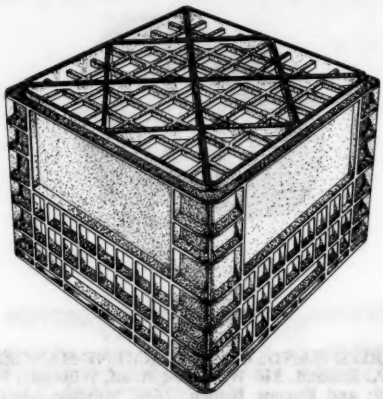
223,808
JAR OR SIMILAR ARTICLE
Ted L. Beaver, Roselle, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Feb. 11, 1971, Ser. No. 114,754
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—44



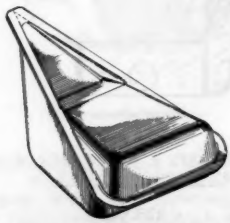
223,809
CARTON FOR GLASSES
Richard K. Oglesbee, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Sept. 17, 1970, Ser. No. 25,038
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—176



223,810
MILK CASE OR SIMILAR ARTICLE
Howard H. McIlvain, Hamilton County, Ohio, assignor to Borden, Inc., New York, N.Y.
Continuation-in-part of design application Ser. No. 15,365, Jan. 15, 1969, now Patent No. 217,440, dated May 5, 1970. This application Feb. 9, 1970, Ser. No. 21,367
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—177



223,811
FLUID DISPENSER PACKAGE
Louis V. Nigro, Saugus, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Oct. 30, 1970, Ser. No. 25,757
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219

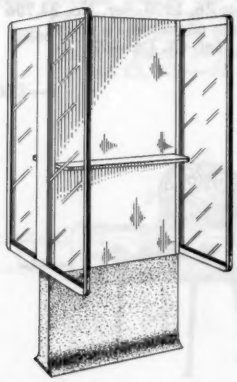


223,812
CLOSURE FOR LIQUID CONTAINERS
Morris A. Long, Lakewood, Colo., assignor to Yorker Manufacturing, Inc., Denver, Colo.
Filed Jan. 25, 1971, Ser. No. 109,727
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—287

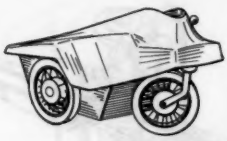
223,813
CHAIR
Ruth Francken, 11 Rue Lepic, Paris, France
Filed Oct. 12, 1970, Ser. No. 25,435
Claims priority, application France May 8, 1970
Term of patent 3½ years
Int. Cl. D6—*02*
U.S. Cl. D15—1

223,814
BUILDING
David P. Ney, 4800 N. Keystone Ave., Indianapolis, Ind. 46205
Filed July 2, 1970, Ser. No. 23,805
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1

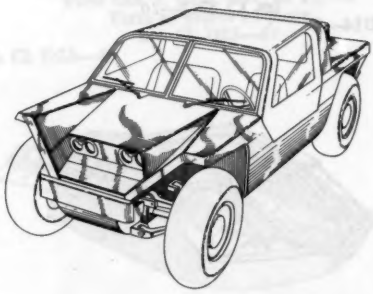
223,815
PEDESTAL MOUNTED TELEPHONE STATION
James Warren Ericsson, Indianapolis, Ind., and Donald Michael Genaro, Haworth, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Oct. 1, 1970, Ser. No. 25,295
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D13—1



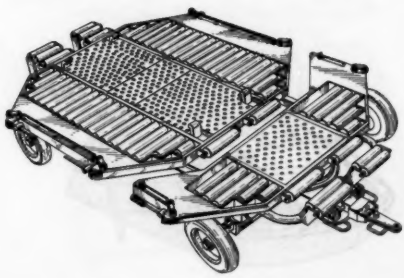
223,816
GOLF BAG CART
Richard A. Hinkle, Little Rock, Ark., assignor to Citation Manufacturing Company Incorporated, Siloam Springs, Ark.
Filed Aug. 10, 1970, Ser. No. 24,406
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D14—3



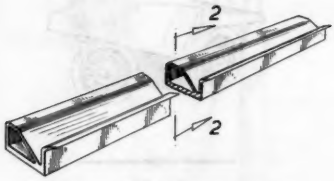
223,817
ALL-TERRAIN VEHICLE
William E. Halopoff, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.
Filed Oct. 12, 1970, Ser. No. 25,459
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D14—3



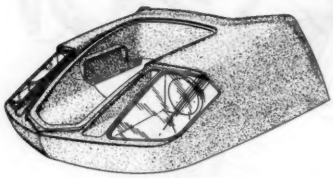
223,818
ROLLER-BED TRAILER
Shusuke Shimoji, Ichikawa, Japan, assignor to Kabushiki Kaisha Tokyo Suchiro Sharyo Seisakusho, Tokyo, Japan
Filed Dec. 4, 1970, Ser. No. 26,297
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D14—3



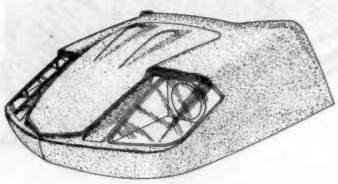
223,819
SEALING STRIP FOR THE SLIDING ROOF OF A VEHICLE OR SIMILAR ARTICLE
Harry Edwards, Solihull, England, assignor to Weathershields Limited, Birmingham, England
Filed June 30, 1970, Ser. No. 23,760
Claims priority, application Great Britain Dec. 31, 1969
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6



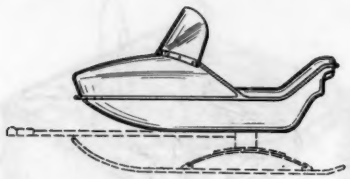
223,820
SNOWMOBILE HOOD
Kurt B. Boehm, Lake Bluff, Ill., assignor to Textron Inc., Providence, R.I.
Filed Nov. 19, 1970, Ser. No. 26,075
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—24



223,821
SNOWMOBILE HOOD
Kurt B. Boehm, Lake Bluff, Ill., assignor to Textron Inc., Providence, R.I.
Filed Dec. 14, 1970, Ser. No. 26,457
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—24



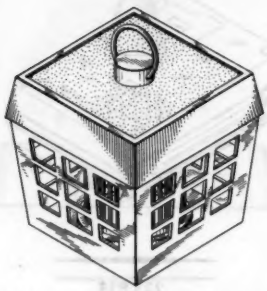
223,822
SNOW SLED BODY
Allan W. Lund, 2641 118th Ave. NW., Minneapolis, Minn. 55433
Filed Dec. 14, 1970, Ser. No. 26,485
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D14—24



223,823
COMBINED CASTER CHAIR AND TRAY FOR INVALID
Thomas E. Bowen, Birmingham, Ala., assignor to Southeastern Metals Division of U.S. Industries, Inc.
Filed Apr. 17, 1970, Ser. No. 22,487
Term of patent 7 years
Int. Cl. D6—*02*
U.S. Cl. D15—1

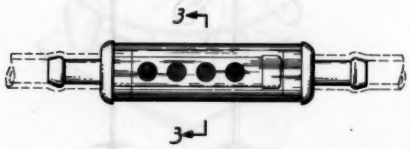
223,824
FRAME FOR A CHAIR
John W. Caldwell, 2202 Pinecrest Drive, Altadena, Calif. 91001
Filed Aug. 26, 1970, Ser. No. 24,706
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D15—1

223,825
INSECT ELECTROCUTING TRAP
Robert D. Kahn, Rockville Centre, N.Y., assignor to Fedtro, Inc., Rockville Centre, N.Y.
Filed Mar. 15, 1971, Ser. No. 124,618
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—19

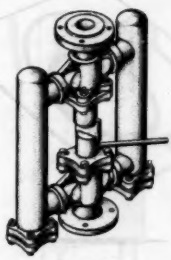


223,826
FISHING ROD HANDLE
Vaughn R. Harrell, 71 Lynnfield Road, Memphis, Tenn. 38138
Filed Nov. 27, 1970, Ser. No. 26,187
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—23

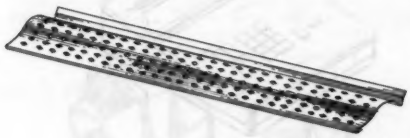
223,827
IN-LINE FUEL FILTER
Carlo Vecchi, Avenida Uno 4, San Bartolo Naucalpan, Estado de Mexico, Mexico
Filed July 9, 1970, Ser. No. 23,874
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4



223,828
DUPLEX STRAINER UNIT
Russell G. Smith, Cincinnati, Ohio, assignor to Xomox Corporation, Cincinnati, Ohio
Filed Sept. 8, 1970, Ser. No. 24,882
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4

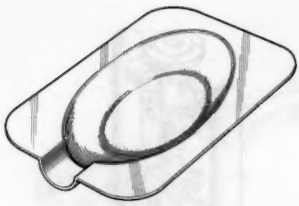


223,829
EAVES TROUGH SHIELD
Frank M. Cook, 28854 E. River Road, Perrysburg, Ohio 43551
Filed Oct. 2, 1970, Ser. No. 25,758
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—42



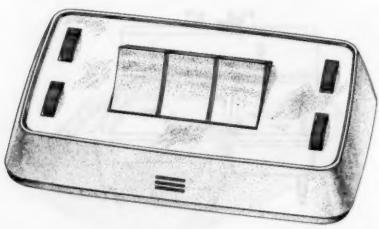
223,830
COMBINATION UTILITY SINK CAN WASHER SANITIZER
Roy L. Emanuele, Massapequa, N.Y., assignor to Institutional Maintenance Corporation, Brooklyn, N.Y.
Filed July 27, 1970, Ser. No. 24,131
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—50

223,831
SITZ BATH
Richard J. Perlman, Worcester, Mass., assignor to JMR Enterprises, Inc., Worcester, Mass.
Filed June 11, 1970, Ser. No. 23,438
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—51

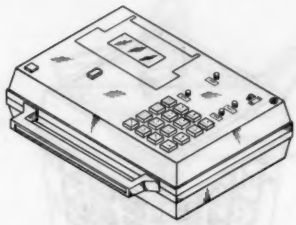


223,832
ELECTRONIC CALCULATOR
Richard H. Penny, New York, N.Y., and Rodney W. Fyfield, New Canaan, Conn., assignors to Sperry Rand Corporation, New York, N.Y.
Filed May 25, 1970, Ser. No. 23,137
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

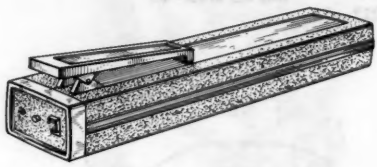
223,833
VIDEOTELEPHONE TRANSCEIVER CONTROL UNIT
Henry Dreyfuss, South Pasadena, and Rembert Ryan Stokes, Middletown, Calif., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Continuation-in-part of design application Ser. No. 15,753, Feb. 12, 1969. This application Apr. 30, 1970, Ser. No. 22,733
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



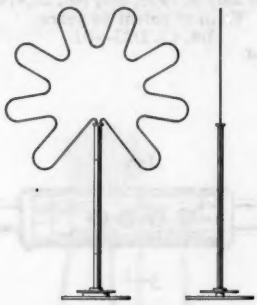
223,834
DIGITAL TAPE RECORDER
William R. Guidi, Huntington, N.Y., assignor to Digital Technology Corporation, Halsite, N.Y.
Filed Oct. 15, 1970, Ser. No. 25,493
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—14



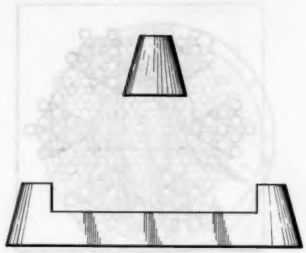
223,835
PAGING RECEIVER HOUSING
Arthur W. Schmidt, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Dec. 3, 1970, Ser. No. 26,265
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



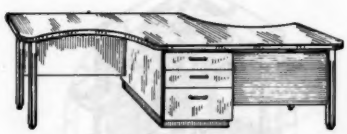
223,836
ANTENNA
John J. Root, 3875 Waldo Ave., Bronx, N.Y. 10463
Filed Dec. 21, 1970, Ser. No. 26,577
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



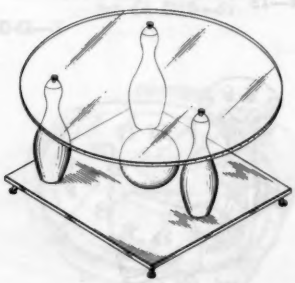
223,837
COMBINED BOOK SUPPORT RACK AND PLANTER
Roy C. Martin, 294 Hanover St., Boston, Mass. 02113
Filed May 27, 1970, Ser. No. 23,171
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D33—2



223,838
DOUBLE DESK
Anton J. Valic, 183 Elmhurst, Elmhurst, Ill. 60126
Filed Apr. 14, 1970, Ser. No. 22,424
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D33—7

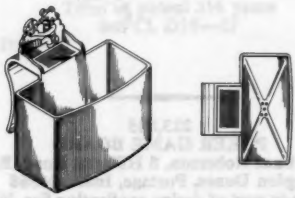


223,839
COCKTAIL TABLE
Leroy Mikell, 768 Quincey St., Brooklyn, N.Y. 11221
Filed Sept. 24, 1970, Ser. No. 25,186
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D33—14



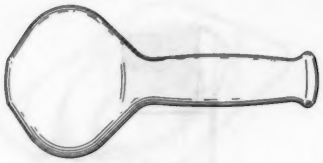
223,840
KITCHEN CABINET
Raymond Loewy, New York, N.Y.
(% C.E.I., 39 Avenue d'Iena, Paris 16e, France)
Filed May 15, 1970, Ser. No. 23,005
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D33—19

223,841
COMBINED SOAP TRAY AND TOY RECEPTACLE
Richard Bohan, 88 Edgewood Place,
Edgewater, N.J. 07020
Filed Aug. 17, 1970, Ser. No. 24,512
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D33—24



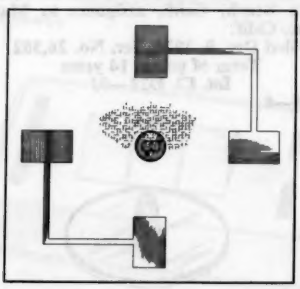
223,842
COMBINED PHONOGRAPH RECORD AND SUPPORT FOR FIGURE TOY OR THE LIKE
Frank J. Kughta, Redondo Beach, and Richard L. May, Manhattan Beach, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 9, 1970, Ser. No. 26,382
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4

223,843
EXERCISING WEIGHT
Tony Li, 389 Alcatraz Ave., Apt. 15, Oakland, Calif. 94618
Filed Dec. 4, 1970, Ser. No. 26,287
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5

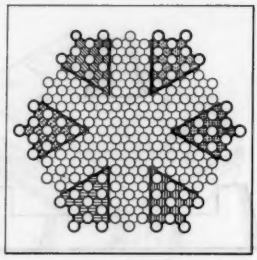


223,844
HOOP ROLLING DEVICE
Virgil K. Rath, 112 S. Pearl St., Janesville, Wis. 53545
Filed Dec. 14, 1970, Ser. No. 26,482
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5

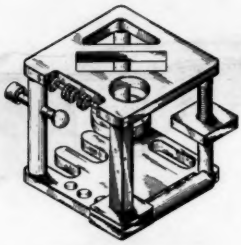
223,845
POKER GAME BOARD
Theodore Lane Roberson, 8 Hillcrest Road, Box 619, Ogden Dunes, Portage, Ind. 46368
Continuation-in-part of design application Ser. No. 21,237, Feb. 3, 1970. This application Jan. 29, 1971, Ser. No. 111,172
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



223,846
GAMEBOARD
Richard D. Smith, 913 N. Liberty St., Arlington, Va. 22205
Filed Feb. 16, 1971, Ser. No. 115,906
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



223,847
ACTIVITY TOY
Clayton Austin Laughlin, Minneapolis, Minn., assignor to General Foods Corporation, White Plains, N.Y.
Filed Oct. 30, 1970, Ser. No. 25,748
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

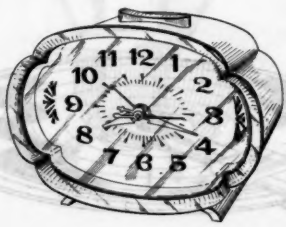


223,848
ANIMAL FIGURE SEAT FOR PLAYGROUND APPARATUS
Steven A. Henning and Philip G. Miller, Anderson, Ind., assignors to American Playground Device Co., Anderson, Ind.
Filed Dec. 7, 1970, Ser. No. 26,340
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—15

223,849
COMBINED DIAL AND HANDS FOR A WATCH OR THE LIKE
Sondra J. Sicherman, Fresh Meadows, N.Y., assignor to Startime Watch Co., Inc., Roslyn, N.Y.
Filed Nov. 4, 1970, Ser. No. 25,812
Term of patent 3½ years
Int. Cl. D10—*07*
U.S. Cl. D42—1

223,850
COMBINED DIAL AND HANDS FOR A WATCH OR THE LIKE
Sondra J. Sicherman, 192—24A 69th Circle, Fresh Meadows, N.Y. 11365
Filed Nov. 4, 1970, Ser. No. 25,816
Term of patent 3½ years
Int. Cl. D10—*07*
U.S. Cl. D42—1

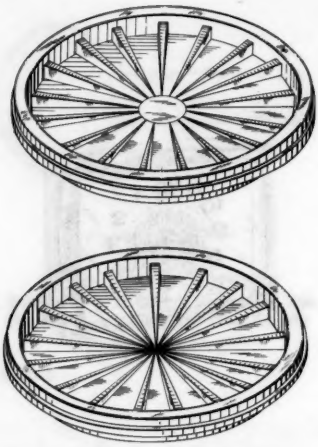
223,851
CLOCK OR SIMILAR ARTICLE
Carl N. Johnson, deceased, late of Stratford, Conn., and Walter A. Stapleton, Sr., Milford, Conn., by Jean H. Johnson, executrix, assignors to General Electric Company
Filed May 11, 1970, Ser. No. 22,915
Term of patent 3½ years
Int. Cl. D10—*01*
U.S. Cl. D42—7



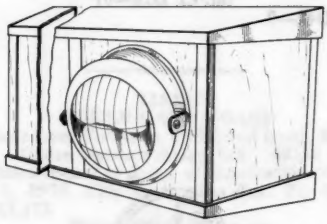
223,852
CLOCK OR SIMILAR ARTICLE
Carl N. Johnson, deceased, late of Stratford, Conn., by Jean H. Johnson, executrix of the estate of Carl N. Johnson, assignor to General Electric Company
Filed May 11, 1970, Ser. No. 22,917
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7

223,853
CLOCK OR SIMILAR ARTICLE
Carl N. Johnson, deceased, late of Stratford, Conn., by Jean H. Johnson, executrix of the estate of Carl N. Johnson, assignor to General Electric Company
Filed May 11, 1970, Ser. No. 22,916
Term of patent 3½ years
Int. Cl. D10—*01*
U.S. Cl. D42—7

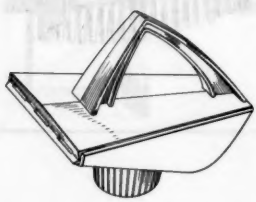
223,854
CONTAINER CLOSURE OR THE LIKE
James B. Swett, Barrington, and Jack V. Croyle, Woonsocket, R.I., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Aug. 27, 1970, Ser. No. 24,724
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—1



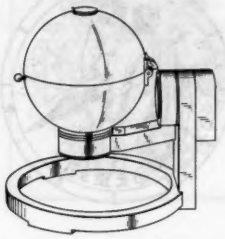
223,855
EMERGENCY LIGHTING UNIT
Frank D. Shaw, 143 Bermondsey St., Toronto, Ontario, Canada
Filed June 29, 1970, Ser. No. 23,702
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20



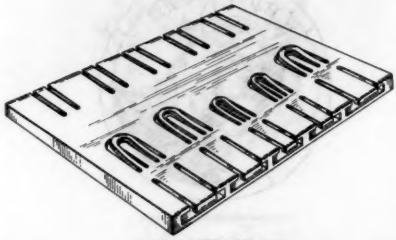
223,856
PORTABLE HAND STEAMER
Clifford E. Grube, Niles, Ill., assignor to Associated Mills, Incorporated
Filed Dec. 17, 1970, Ser. No. 26,540
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D49—13



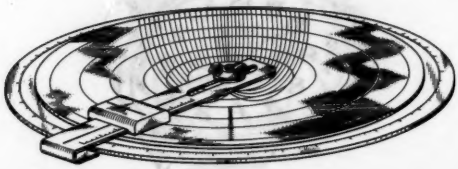
223,857
WATCH TEST STAND
Andre Lehmann and Aime Fumey, La Chaux-de-Fonds, Switzerland, assignors to PORTESCAP, La Chaux-de-Fonds, Switzerland
Filed Dec. 7, 1970, Ser. No. 26,345
Claims priority, application Switzerland June 11, 1970
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D52—1



223,858
COIN DISPENSER
Louis C. McIlheran, 6123 Velasco St., Dallas, Tex. 75214
Filed Oct. 14, 1970, Ser. No. 25,478
Term of patent 14 years
Int. Cl. D31—Misc.
U.S. Cl. D52—4

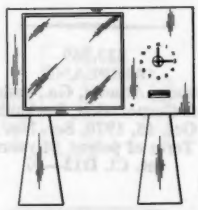


223,859
CIRCULAR SLIDE RULE
Jesse H. Jefferies, Houston, Tex. (18515 Vineland Drive, Nassau Bay, Tex. 77058)
Filed Feb. 26, 1971, Ser. No. 119,444
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6



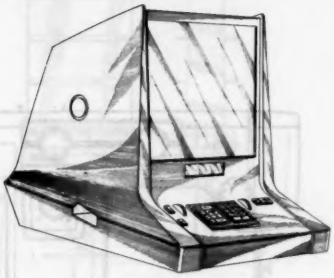
223,860
TRANSISTOR RADIO
Shogo Imai, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Dec. 28, 1970, Ser. No. 26,664
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4

223,861
PROJECTION VIEWER CABINET
Jerry T. Melton, Tampa, Fla., assignor to Televue, Inc., Tampa, Fla.
Filed Feb. 24, 1970, Ser. No. 21,578
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1

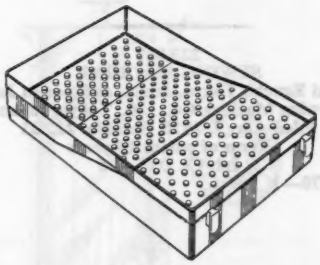


223,862
COPY CAMERA SUPPORT STAND
Anthony T. Clarkson, 5655 N. Maria Drive, Tucson, Ariz. 85704
Filed Apr. 27, 1970, Ser. No. 22,644
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D61—1

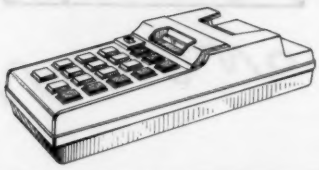
223,863
MICROFILM VIEWER
Jay Sucre, Exton, Pa., and William Adam Hoffman, Collingswood, N.J., assignors to Burroughs Corporation, Detroit, Mich.
Continuation-in-part of design application Ser. No. 17,680, June 12, 1969. This application Aug. 26, 1970, Ser. No. 24,700
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1



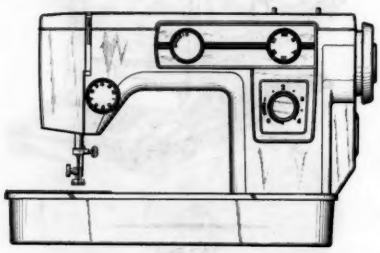
223,864
PAINT TRAY
Ellsworth Vines, Wellesley Hills, Mass., assignor to Baltimore Brushes, Inc., Boston, Mass.
Filed Mar. 10, 1971, Ser. No. 123,126
Term of patent 14 years
Int. Cl. D4—*04*
U.S. Cl. D64—18



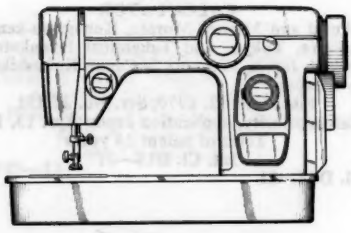
223,865
CALCULATOR
Shiro Anzai and Minoru Murata, Kanagawa-ken, Tatsuo Nishikawa, Tokyo, and Takamitsu Hanakata, Kanagawa-ken, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 12, 1970, Ser. No. 25,431
Claims priority, application Japan Apr. 13, 1970
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11



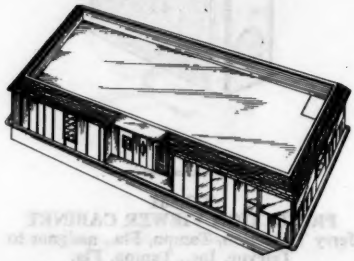
223,866
SEWING MACHINE
Yasuaki Yamamoto, Tokyo, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan
Filed Mar. 30, 1970, Ser. No. 22,121
Claims priority, application Japan Oct. 9, 1969
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—1



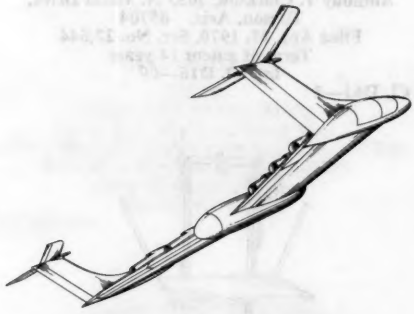
223,867
SEWING MACHINE
Yoshiaki Eguchi, Tokyo, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan
Filed Apr. 7, 1970, Ser. No. 22,303
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—1



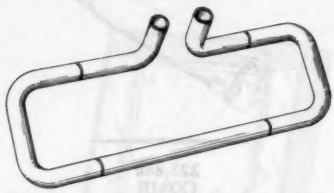
223,868
FLOATING HOME
Clifton E. Carlisle, 15715 Kruhm Road, Burtonsville, Md. 20730, and Martin A. Spalding, 121 Pleasant Hill Road, Owings Mills, Md. 21117
Filed July 8, 1970, Ser. No. 23,862
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D71—1



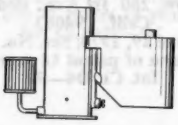
223,869
AIRPLANE
Charles H. Hurkamp, Atlanta, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Oct. 15, 1970, Ser. No. 25,512
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D71—1



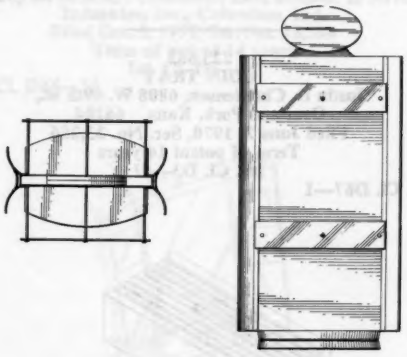
223,870
DUAL PEN HOLDER
Richard K. Enseki, Glen Rock, and Michael P. Arnone, Fairview, N.J., assignors to Kreisler Manufacturing Corporation, North Bergen, N.J.
Filed Sept. 4, 1970, Ser. No. 24,855
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—5



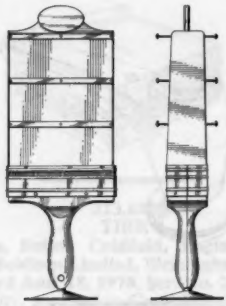
223,871
CARBURETOR
Jiro Sakai, 1954–6 Yahatamachi; and Junichi Kawaguchi, 322 Oaza-Koyama, both of Suzaka, Nagano Prefecture, Japan; and Michihiro Noda, 1, 4-chome, Showa, Chiryumachi, Hekikai-gun, Aichi Prefecture, Japan
Filed July 22, 1970, Ser. No. 24,062
Claims priority, application Japan Feb. 5, 1970
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D77—1



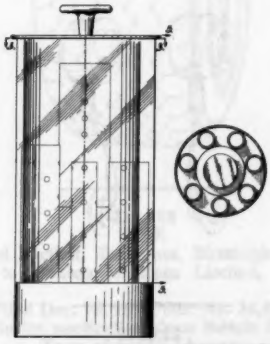
223,872
DISPLAY STAND
James J. Jarecki, Greendale, Wis., assignor to EZ Paintr Corporation
Filed Nov. 20, 1970, Ser. No. 26,102
Term of patent 3½ years
Int. Cl. D6—*06*
U.S. Cl. D80—9



223,873
DISPLAY STAND
James J. Jarecki, Greendale, Wis., assignor to EZ Paintr Corporation
Filed Nov. 20, 1970, Ser. No. 26,103
Term of patent 3½ years
Int. Cl. D6—*06*
U.S. Cl. D80—9



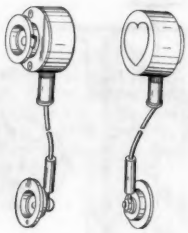
223,874
ELECTRIC BRUSH STERILIZER
Charles M. Ellis, 812 Natches, Liberty, Mo. 64068
Filed Mar. 2, 1970, Ser. No. 21,706
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D83—1



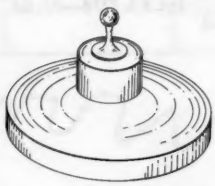
223,875
ORTHOPEDIC DRILL GUIDE TARGET
William X. Halloran, 440 Fair Drive, Costa Mesa, Calif. 92,626
Filed Dec. 8, 1970, Ser. No. 26,361
Term of patent 14 years
Int. Cl. D24—*02, 03*
U.S. Cl. D83—1

223,876
HAND MASSAGER
Ronald O. Hilger, Elmhurst, Ill., assignor to Associated Mills, Inc.
Filed Dec. 10, 1970, Ser. No. 26,391
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1

223,877
RADIOTELEMETRY TRANSMITTER FOR MONITORING HEART RATE
Roger Michael Glaser, 266—07 137th Ave., Laurelton, N.Y. 11413
Filed Dec. 28, 1970, Ser. No. 26,669
Term of patent 7 years
Int. Cl. D24—*02*
U.S. Cl. D83—1



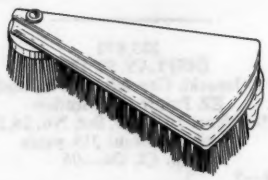
223,878
COMBINED CIGARETTE LIGHTER AND ASH TRAY
Samuel J. Koch, % Korex Industries, 831 Malcolm Road, Burlingame, Calif. 94010
Filed Aug. 4, 1970, Ser. No. 24,294
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D85—2



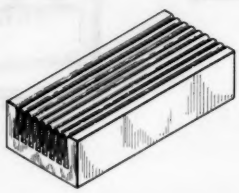
223,879
SMOKING DEVICE FILTER CARTRIDGE
Milton P. Chernack, West Hempstead, N.Y., assignor to Delcron Products, Inc., New York, N.Y.
Filed Dec. 14, 1970, Ser. No. 26,467
Term of patent 14 years
Int. Cl. D27—*01*
U.S. Cl. D85—6

223,880
COMB
James Edgar Tucker, Chicago, Ill., assignor to The Gillette Company, Boston, Mass.
Filed Nov. 16, 1970, Ser. No. 26,023
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—8

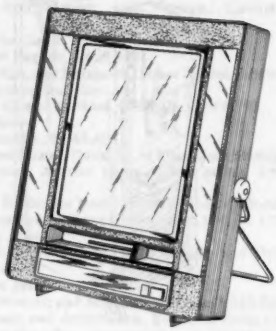
223,881
COMBINATION SHOE BRUSH, POLISHER AND DAUBER
David Belbow, 280 1st Ave., Redwood City, Calif. 94063
Filed June 29, 1970, Ser. No. 23,735
Term of patent 14 years
Int. Cl. D4—*99*
U.S. Cl. D86—11



223,882
COIN TRAY
Justin D. Christensen, 6808 W. 69th St., Overland Park, Kans. 66204
Filed June 2, 1970, Ser. No. 23,256
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—1

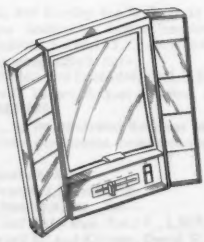


223,883
ILLUMINABLE MAKEUP MIRROR OR SIMILAR ARTICLE
John C. Shalvoy, Fairfield, Conn., assignor to General Electric Company
Filed Apr. 30, 1970, Ser. No. 22,741
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10

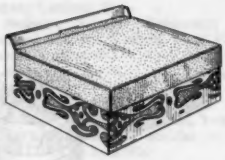


223,884
ARTIFICIAL EYELASH
Jan Dean, New York, N.Y., and Milton Schwarz, Westport, Conn., assignors to Revlon, Inc.
Filed Aug. 20, 1970, Ser. No. 24,591
Term of patent 14 years
Int. Cl. D28—*04*
U.S. Cl. D86—10

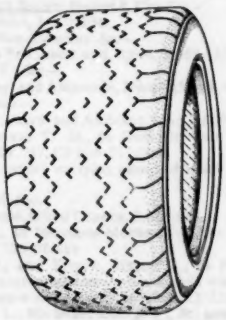
223,885
ILLUMINABLE MAKEUP MIRROR
Jeffrey D. Bransky, Columbus, Ind., assignor to Arvin Industries, Inc., Columbus, Ind.
Filed Oct. 2, 1970, Ser. No. 25,308
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D86—10



223,886
STORAGE BOX
Irwin J. Ferdinand, Glencoe, and Irwin R. Kulbersh, Morton Grove, Ill., assignors to The Hirsh Company, Skokie, Ill.
Filed Mar. 16, 1970, Ser. No. 21,918
Term of patent 3½ years
Int. Cl. D3—*99*
U.S. Cl. 87—1



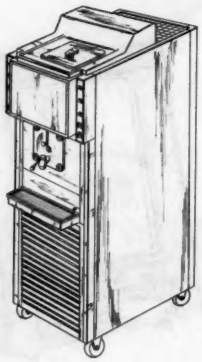
223,887
TIRE
Iain C. Mills, Sutton Coldfield, England, assignor to Dunlop Holdings Limited, Birmingham, England
Filed Aug. 18, 1970, Ser. No. 24,560
Claims priority, application Great Britain Mar. 4, 1970
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



223,888
TIRE
Eric Clifford Bartlett, Erdington, Birmingham, England, assignor to Dunlop Holdings Limited, Birmingham, England
Filed Dec. 15, 1970, Ser. No. 26,505
Claims priority, application Great Britain July 3, 1970
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20

223,889
BEVERAGE SMOOTHER UNIT
George E. Kunkle, Jr., P.O. Box 8321, Mesquite, Tex. 76112
Filed Mar. 27, 1970, Ser. No. 22,077
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D94—3

223,890
SEMIFROZEN JUICE DISPENSER OR SIMILAR ARTICLE
Robert B. Hartley, Columbia Heights, Minn., assignor to The Cornelius Company, Anoka, Minn.
Filed Nov. 9, 1970, Ser. No. 25,901
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D94—3



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF JUNE, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-T-O Inc.: *See—*
Coolbaugh, Richard W.; and Engels, Floyd W., 3,670,067.

AB Akerlund & Rausing: *See—*
Andersson, Rolf Urban; and Persson, Lennart Gerhard, 3,669,344.

Abbott Laboratories: *See—*
Hirner, Robert Eugene, 3,669,902.
Swett, Leo Ralph; and Ratajczyk, James Daniel, 3,669,983.

Abbott, Paul, Company, Inc.: *See—*
Green, Edgar E.; and Nuckols, Phillip H., 3,669,195.

Abelow, Joseph: *See—*
Nevarez, Richard J., 3,669,401.

Abler Roger L.; and Strand, David L., to Minnesota Mining and Manufacturing Company. Aerosol spray cleaner-polish. 3,669,892, Cl. 252-90.000

Abrahamsen, Per Reider, to International Standard Electric Corporation. Ciphering method and apparatus. 3,670,104, Cl. 178-22.000

Acello, Salvatore J.: *See—*
Frantz, Franklin D.; Acello, Salvatore J.; and Geller, Harold I.,3,670,091.

Achermann, Franz: *See—*
Achermann, Werner; and Achermann, Franz,3,669,067.

Achermann, Werner; and Achermann, Franz, to Boise Cascade Corporation. Apparatus for impregnating corrugated cardboard. 3,669,067, Cl. 118-50.000

Achterberg, Raymond C., to Giddings & Lewis, Inc. Automatic insert assembly system employing rotary transfer of the workpiece. 3,668,773, Cl. 29-429.000

Ackermann, Jacob; Croce, Roberto; and Reguzzoni, Riccardo, to Societa' Italiana Resine S.p.A. Process for preparing acrylic or methacrylic acid. 3,670,016, Cl. 260-526.

Aczel, Rezso: *See—*
Cohen, Edward M.; Grabowski, Edward J. J.; and Aczel, Rezso,3,670,083.

Adachi, Iwao P., to Itek Corporation. Optical surface generating apparatus. 3,669,867, Cl. 204-224.000

Adams, Dolor N.; and Fauser, Donald L., to Harris-Intertype Corporation. Coating compositions and methods and articles. 3,669,657, Cl. 96-1.8

Adams, Frederick J., to Cam Gears Limited. Power assisted steering system. 3,669,146, Cl. 137-596.200

Adams, James E.; and Haas, Werner E. L., to Xerox Corporation. Liquid crystal color filter. 3,669,525, Cl. 350-158.000

Adams, Kenneth D., to Singer Company, The. Push button presser bar release. 3,669,050, Cl. 112-237.000

Adams, Kenneth D.; and Odermann, Charles R., to Singer Company, The. Monogramming insert for buttonhole attachment. 3,669,044, Cl. 112-77.000

Adams, Phillip: *See—*
Beinfest, Sidney; Jacura, Zenon; and Adams, Phillip,3,669,633.

Adams, Ronald Alfred Charles, to Algraphy Limited. Process of strengthening presensitized lithographic plate with lacquer emulsion. 3,669,664, Cl. 96-33.000

Adams,Arthur C.: *See—*
Robinson, Charles A.; and Adams,Arthur C.,3,669,957.

Admiraal, Lambertus, to Mac Millan Bloedel Limited. Microwave drying apparatus and method. 3,670,133, Cl. 219-10.550

Advance Drainage Systems, Inc.: *See—*
Martin, Ronald C.; and Sixt, Marty E., 3,669,473.

Advanced Research Instrument Systems, Inc.: *See—*
Golden, David E., 3,670,172.

Aerojet-General Corporation: *See—*
Wooten, Robert D.; Neal, Warren D.; and Einfeldt, George J., 3,669,245.

Ager, David Joseph; and Stanley, Ian William, to Post Office, The. Two terminal negative resistance device employing bipolar-unipolar transistor combination. 3,670,183, Cl. 307-304.000

Agfa-Gevaert Aktiengesellschaft: *See—*
Engelsmann, Dieter; and Schroder, Rolf, 3,668,988.
Winkler, Alfred; Theer, Anton; Zanner, Johann; and Hennig, Fridolin, 3,668,989.

Agnihotri, Ram K., to International Business Machines Corporation. Cyclic polyisoprene photoresist compositions. 3,669,662, Cl. 96-75.000

Air Logistics Corporation: *See—*
Schirtzinger, Joseph F., 3,669,052.

Air Products and Chemicals, Inc.: *See—*
Cebalo, Tony; and Alderman, John F., 3,669,982.
Cornelius, Edward B.; and Koester, David W., 3,669,904.
Heiberger, Charles A.; and Mottern, Henry O., 3,670,056.

Aisin Seiki Company Limited: *See—*
Komatsu, Noboru; Suzuki, Takatoshi; Ito, Takuo; Hara, Yoshiteru; and Asakura, Kouichi, 3,668,917.

Aisin Seiki Kabushiki Kaisha: *See—*
Sakakibara, Naoji, 3,670,174.

Ajinomoto Co., Inc.: *See—*
Akamatsu, Akira; Togo, Kazushi; and Kida, Yoko, 3,669,717.

Akamatsu, Akira; Togo, Kazushi; and Kida, Yoko, to Ajinomoto Co., Inc. Method of coating shaped articles of plasticized polyvinyl chloride. 3,669,717, Cl. 117-72.000

Aker, Jimmie R.: *See—*
Cullen, Roy H.; Aker, Jimmie R.; and Burke, William E.,3,669,199.

Akgulian, Sahag C.; Haffner, Donald G.; and Heth, Sherman C., to Jacobsen Manufacturing Company. Gang lawn mower with self-sharpening means. 3,668,844, Cl. 56-7.000

Aktiebolaget Electrolux: *See—*
Hagdorn, Manfred Otto; and Sandberg, Kjell T-son, 3,668,974.
Magnusson, Olov Tage; and Kenneryd, Karl Gosta Lennart, 3,668,889.

Aktiebolaget Volvo: *See—*
Hartelius, Nils Magnus, 3,669,469.

Aktien-Gesellschaft 'Weser': *See—*
Renz, Eberhard; Voss, Siegfried; and Ecke, Gunter, 3,668,725.

Aktiengesellschaft Brown, Boveri & Cie: *See—*
Greuter, Robert, 3,670,204.

Aktieselskabet Niro Atomizer: *See—*
Gude, Klaus Erik; and Lund, Bjorn, 3,669,432.

Alderman, John F.: *See—*
Cebalo, Tony; and Alderman, John F.,3,669,982.

Alebrant, John: *See—*
Klingspor, Richard; and Alebrant, John,3,669,015.

Alexander, Granison T., Jr., to Gem Oil Tool Company. Blow-up preventer. 3,669,187, Cl. 166-217.000

Alford, Glen M.Artist's carrying case and easel. 3,669,227, Cl. 190-11.000

Algraphy Limited: *See—*
Adams, Ronald Alfred Charles, 3,669,664.

Allais, David C., to Interface Mechanisms, Inc. Tape feed system. 3,670,145, Cl. 235-61.11e

Allen, Robert J.; and Petrow, Henry G., to Prototech Company. Method of operating electrochemical cells with increased current density and oxygen efficiency. 3,669,749, Cl. 136-86.

Alley, Raymond L.; Hartman, George F., Jr.; and Ewald, John D., to American Warming & Ventilating Inc., The. Fluid back pressure damper. 3,668,999, Cl. 98-110.000

Allgower, Martin; Perren, Stefan; and Russenberger, Max E. Osteosynthetic pressure plate construction. 3,668,972, Cl. 90-11.

Allied Chemical Corporation: *See—*
Kolyer, John McNaughton; and Kveglis, Albert Andrew, 3,669,827.
Stewart, Aubrey P., Jr.; and Falk, John D., 3,669,675.

Allington, Trevor Richard, to RCA Corporation. Method of making a thick-film hybrid circuit. 3,669,733, Cl. 117-212.000

Allison, Robert J.; Hatfield, Paul E.; and Frumerman, Robert, to Dravo Corporation. Method for the regeneration of hydrochloric acid from spent pickle liquor and like solutions. 3,669,623, Cl. 23-154.

Allman, William T., Jr.; Joseph, Charles W.; and Higgins, Ralph G., Jr., to Celanese Corporation. Bulked non-wovens. 3,669,788, Cl. 156-167.000

Allmanna Svenska Elektriska Aktiebolaget: *See—*
Andersson, Anders R.; and Virsberg, Lars-Goran, 3,670,192.
Boksjo, Carl Ingvar; and Sehman, Bengt Allan, 3,670,217.
Ekstrom, Ake, 3,670,236.
Gard, Inge, 3,670,127.
Zinck, Petersen, Jorgen; and Lundovist, Bertil, 3,670,175.

Aloma Products, Inc.: *See—*
Ring, Raymond M., 3,668,733.

Alpha Industries, Inc.: *See—*
Levi, Clifford A., 3,669,773.

Alsch, Richard E., to Graham Transmissions, Inc. Flexible drive coupling. 3,668,892, Cl. 64-14.000

Alth, Max. Single-phase motors. 3,670,191, Cl. 310-163.000

Altman, Daniel E., to United States of America, Navy. Method for determining a ship's heading employing an electro-optical angle measuring device. 3,669,548, Cl. 356-141.000

Altounyan, Roger Edward Collingwood; and Howell, Harry, deceased0 (by Howell, Eunice Cockburn; executrix), to Fisons, Limited. Inhalation device. 3,669,113, Cl. 128-266.

Amana Refrigeration, Inc.: *See—*
Bucksbaum, Arnold M., 3,670,134.

Amano, Takashi: *See—*
Nakao, Osakazu; Nakagawa, Saburo; Hirose, Juichi; Yamazaki, Shigeyuki; Amano, Takashi; Nakamura, Toshio; and Yamamoto, Hiroyuki,3,669,916.
Ambrogi, Vittorio; and Logemann, Willy, to Erba, Carlo, S.p.A. Pyrazine derivatives and process for their preparation. 3,669,966, Cl. 260-250.00r
Amdahl, Gene M.; Arnold, Richard F.; Dauber, Philip S.; Freiman, Charles V.; Robelen, Russell J.; Schorr, Herbert; and Wierzbicki, John R., to International Business Machines Corporation. Storage control system. 3,670,309, Cl. 340-172.500
Amemiya, Toshioki: *See—*
Masuyama, Takeshi; Amemiya, Toshioki; and Iida, Yoshio,3,670,216.
American Air Filter Company, Inc.: *See—*
Everett, Wilhelm Sydow, 3,669,150.
Westlin, Karl L.; and Getzin, Allan R., 3,668,843.
American Aviation Corporation: *See—*
Jarvis, Richard L.; and Kully, Walter, 3,669,801.
Jarvis, Richard L.; Kully, Walter; Calusen, Victor H.; Zweig, Arnold; and Engvoll, Sverre, 3,669,803.
Jarvis, Richard L.; and Kully, Walter, 3,669,807.
American Can Company: *See—*
Harker, Royce Kenneth; Prickett, Warren Wilson; and Roesch, Kurt Fritz, 3,669,323.
American Chain & Cable Company, Inc.: *See—*
Maase, Robert; and Karlstrom, Karl R. M., 3,669,027.
American Clinic, Inc.: *See—*
Symmes, Paul S., 3,669,119.
American Cyanamid Company: *See—*
Lutz, Albert William; and Feeny, Richard William, 3,669,970.
Padmanathan, Thurairajah, 3,669,985.
Schaefer, Frederic Charles, 3,670,022.
Susi, Peter Vincent; and Weston, Norma Ann, 3,670,025.
Weyker, Robert George; Baitinger, William Frederick, Jr.; and De Marco, John Gregory, 3,669,609.
American Desk Manufacturing Company: *See—*
Chisholm, William A., 3,669,496.
American Home Products Corporation: *See—*
Bogash, Richard; Wolf, Milton; and Sellstedt, John H., 3,669,980.
Deist, Robert P., 3,669,978.
American Nucleonics Corporation: *See—*
Mardon, Austin; and Nielsen, Robert N., Jr., 3,670,328.
American Optical Corporation: *See—*
Kantorski, Joseph W.; La Marre, David A.; and Smith, Donald A., 3,670,263.
Koester, Charles J.; and Swope, Charles Hermas, 3,670,260.
Magnante, Peter C., 3,670,258.
Silverberg, Carl G., 3,669,435.
Strack, Richard R., 3,669,772.
Young, Charles Gilbert, 3,670,259.
American Photocopy Equipment Company: *See—*
Savit, Joseph; Guzik, Rudolph P.; Wayne, Harry A.; Saklikar, Arvind R.; and Van Eck, Jack M., 3,669,073.
American Regitel Corporation: *See—*
Wagner, Robert L.; and Ragland, Evan L., II, 3,669,237.
American Standard, Inc.: *See—*
Divecha, Amarnath P.; Lare, Paul J.; Ordway, Fred, Jr.; Hermann, Robert A.; Van Blaricon, Orville B.; and Hahn, Henry, 3,668,748.
Forbes, Norman Arthur, 3,670,167.
American Velcro, Inc.: *See—*
Perina, Joseph, 3,668,808.
American Waagner-Bero Company, Inc.: *See—*
Kemmetmueller, Roland, 3,669,436.
American Warming & Ventilating Inc., The: *See—*
Alley, Raymond L.; Hartman, George F., Jr.; and Ewald, John D., 3,668,999.
American Wire Cloth Company: *See—*
Schmiege, Lester C.; and Zeluff, Wendell C., 3,670,138.
Amos, Arthur: *See—*
Grewcock, Sidney B.; Cooper, Alan; Amos, Arthur; and Sylvester, Paul,3,668,899.
Amos, Robert Walter James: *See—*
Drake, Cyril Francis; and Amos, Robert Walter James,3,669,697.
AMP Incorporated: *See—*
Bruner, Peter Martin, 3,670,289.
Desso, Thomas Dean; and Henschen, Homer Ernst, 3,669,054.
Evans, William Robert, 3,670,288.
Garver, William Joseph, 3,670,293.
Andersen, Adolph Leslie. Four wheel drive vehicle. 3,669,202, Cl. 180-50.000
Andersen, Bjorn, to Manus, Max, and Manus, George. Decentralised local telephone system. 3,670,108, Cl. 179-18.00j
Anderson, Daniel J., to Mallory, P. R., & Co. Inc. Capacitor with azeotropic electrolyte for wide temperature range operation. 3,670,212, Cl. 317-230.000
Anderson, Gordon S.: *See—*
Kamborian, Jacob S.; Typrowicz, Wladyslaw; and Anderson, Gordon S.,3,668,728.
Anderson, Robert J., to Singer Company, The, mesne. Reflective relay optical system for two-axis deflection. 3,669,522, Cl. 350-6.000
Andersson, Anders R.; and Virsberg, Lars-Goran, to Allmanna Svenska Elektriska Aktiebolaget. Rotating electrical machine with means for preventing discharge form coil ends. 3,670,192, Cl. 310-196.000
Andersson, Karl Ivan. Exchangeable grease gun tip. 3,669,220, Cl. 184-105.00c
Andersson, Rolf Urban; and Persson, Lennart Gerhard, to AB Akerlund & Rausing. Carton with capped lid. 3,669,344, Cl. 229-44.0cb
Ando, Satoshi; Tanaka, Yusaku; Kojima, Minoru; and Fujimura, Kyoichi, to Kanegafuchi Boseki Kabushiki Kaisha, and Snia Viscosa Nazionale Industria Applicazioni Viscosa S.p.A. Copolyamide fibers of reduced stickiness containing a normal paraffin. 3,669,917, Cl. 260-78.00r
Andrea, Alfred. Auto body sectional shaping forms. 3,669,813, Cl. 161-37.000
Andresen, Rolf; Fiorino, Benjamin C.; and Niccore, Fred W., to International Business Machines Corporation. Method and apparatus for detecting errors read from moving-magnetic-storage device with digital interface. 3,670,304, Cl. 340-146.10f
Andrews, Peter. Surface, material and health protective combination device. 3,669,204, Cl. 180-69.1
Andrews, Thomas W.: *See—*
United States of America,National Aeronautics and Space Administration, Administrator, 3,669,393.
Angele Wilhelm; and Martineck, Hans G., to United States of America, National Aeronautics and Space Administration. Electrical connector. 3,670,290, Cl. 339-75.0mp
Angola Wire Products, Inc.: *See—*
Heroy, Giles F., 3,669,278.
Annand, Robert R.; Redmore, Derek; and Rushton, Brian M., to Petrolite Corporation. Use of cyclic amidine polymers as corrosion inhibitors. 3,669,612, Cl. 21-2.500
Annis, Darrell D.; Dodson, Keith D.; and Sykes, Paul M., to Celanese Corporation. Polyethylene terephthalate films containing hydrated aluminum silicate for less shrinkage and abrasion. 3,669,931, Cl. 260-75.00r
Anschutz & Co., G.m.b.H.: *See—*
Kundler, Walter; and Hingst, Gerd, 3,670,227.
APM Corporation: *See—*
Dimitry, Edward A., 3,668,938.
Apparatebau Aktiengesellschaft: *See—*
Schworer, Emil, 3,669,041.
Apparatefabrik A.G. Huttwil: *See—*
Horak, Heinz, 3,669,154.
Appleton, Daniel, to USM Corporation. Processes for molding polyurethane foam articles. 3,670,070, Cl. 264-244.000
Appleton Wire Works Corporation: *See—*
Lee, Charles A.; and Furbeck, Warren E., 3,669,781.
Applied Laser Technology Incorporated: *See—*
Barker, Ronald C., 3,668,795.
Apps, John A.: *See—*
Spedden, Henry R.; Apps, John A.; and Lowe, Donald F.,3,669,651.
Aprand, Inc.: *See—*
Bratton, Francis H., 3,668,723.
Apsalons, Talvalds-Olavs Arnoldovich: *See—*
Solomonov, Nikolai Nikolaevich; Ishanin, Vladimir Pavlovich; and Apsalons, Talvalds-Olavs Arnoldovich,3,668,824.
Arai, Masanao: *See—*
Hirata, Hiroshi; and Arai, Masanao,3,669,862.
Araki, Shinichi: *See—*
Susuki, Rinnosuke; Hoshi, Hiroshi; Araki, Shinichi; and Ohshita, Takashi,3,669,321.
Arenco Aktiebolag: *See—*
Engvoll, Sverre, 3,669,805.
Jarvis, Richard L.; Kully, Walter; Calusen, Victor H.; Zweig, Arnold; and Engvoll, Sverre, 3,669,803.
Arnold, Carter H. Rope gripping device. 3,669,223, Cl. 188-188.000
Arnold, John W.: *See—*
Kirkham, Thomas A.; Arnold, John W.; and Giufrida, Anthony J.,3,669,857.
Arnold, Richard F.: *See—*
Amdahl, Gene M.; Arnold, Richard F.; Dauber, Philip S.; Freiman, Charles V.; Robelen, Russell J.; Schorr, Herbert; and Wierzbicki, John R.,3,670,309.
Arnold, Richard F.; Dauber, Philip S.; Freiman, Charles V.; Robelen, Russell J.; and Wierzbicki, John R., to International Business Machines Corporation. Interstorage transfer mechanism. 3,670,307, Cl. 340-172.500
Arth, Glen E.: *See—*
Patanelli, Dolores J.; and Arth, Glen E.,3,670,079.
Arthur, Wallace W.: *See—*
Hanson, Laurence B.; and Arthur, Wallace W.,3,669,197.
Artos Engineering Company: *See—*
Randar, Magnus, 3,668,764.
Art's-Way Manufacturing Company Incorporated:*See—*
Bradley, Richard S., 3,669,756.
Arumugham, Rangaswamy; and Wheeler, Robert Charles, to Sylvania Electric Products, Inc. Cathode ray tube set-up circuitry. 3,670,095, Cl. 178-5.40r
Asahara, Tomohiko; Yoda, Naoya; and Minami, Nuneyoshi, to Toray Industries, Inc. Thermally stable thermosetting resin. 3,669,930, Cl. 260-47.0cz
Asahi Glass Co., Ltd.: *See—*
Nakayama, Junn; and Fukatsu, Yukio, 3,670,061.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Terasaki, Iwao; Kimura, Yoshio; Okamoto, Toshio; Shima, Tsukasa; Kohno, Mitsuo; and Kitamura, Kazuyuki, 3,669,927.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Kurei, Hiroshi, 3,668,993.
Asahikasei Kogyo Kabushiki Kaisha: *See—*
Izawa, Shin-Ichi; Nakamura, Katsuyuki; and Mizoguchi, Yoshiyuki, 3,670,033.
Asai, Taizo: *See—*
Yokota, Tadashi; and Asai, Taizo,3,669,784.
Asakura, Kouichi: *See—*
Komatsu, Noboru; Suzuki, Takatoshi; Ito, Takuo; Hara, Yoshiteru; and Asakura, Kouichi,3,668,917.
Asano, Shintaro: *See—*
Baxter, Larry K.; and Asano, Shintaro,3,670,103.
Asen, Donald B., to Bev Maid, Inc. Cup assembly. 3,669,001, Cl. 99-78.000
Athey, Roy L.: *See—*
Moore, Joseph B.; and Athey, Roy L.,3,669,180.
Atkins, Bobby Leroy: *See—*
Harper, Billy Gene; Bashaw, Robert Niles; and Atkins, Bobby Leroy,3,669,103.
Atkins, Carl E., to Wagner Electric Corporation. Control circuit with anti-switching and anti-noise circuitry. 3,670,178, Cl. 307-202.000
Atlantic Richfield Company: *See—*
Howell, Eddie P.; Youngman, Carl A.; Hardison, Jack E.; and Tribble, Robert E., 3,668,927.
Sheng, Ming Nan; and Zajacek, John G., 3,670,002.
Trevillyan, Alvin E.; and Vecbastiks, Ivars, 3,670,003.
Atlas Chemical Industries, Inc.: *See—*
Capik, Robert J.; and Wright, Leon W., 3,670,035.
Atteridge, David G.: *See—*
Sinizer, David I.; Toy, Albert; Atteridge, David G.; and Fanelli, Louis H.,3,669,364.
Attri, Narinder S. Wheelspeed information signal processing system. 3,669,508, Cl. 303-21.00r
Attridge, John T., to Westinghouse Electric Corporation. Recess mounted electric air heater. 3,670,142, Cl. 219-367.000
Augarde, Marie Jeanne: *See—*
Gutton, Henri; and Hugon, Jean Jacques,3,670,247.
August, Rudolf R.; and Palmquist, Richard L., to North American Rockwell Corporation. Monolithic heteroepitaxial microwave tunnel die. 3,670,218, Cl. 317-235.
Aumann, Frederick C., III; and Butler, Gerald V., Jr., to Digital Equipment Corporation. Data processor console communications system. 3,670,311, Cl. 340-172.500
Aunstrup, Knud; and Mahler, Jorn Leo, to Novo Terapeutisk Laboratorium A/S. Process for the production of uricase. 3,669,843, Cl. 195-66.00r
Ausdall, Carl Van. Rotary cutting reel, ledger blade and baffle assembly. 3,668,847, Cl. 56-252.000
Automobiles Peugeot: *See—*
Guettier, Michel, 3,669,510.
Le Mire, Noel, 3,669,397.
Automotive Exhaust Control Corporation: *See—*
Loudenslager, Ray D., 3,669,420.
Autovox S.p.A.: *See—*
Cicatelli, Rodolfo, 3,669,455.
Avco Corporation: *See—*
Elmore, Robert E., 3,670,162.
Avena, Salvatore; and Richardson, Harry L., to Curtiss-Wright Corporation. Rotation transmission mechanism. 3,668,940, Cl. 74-89.150
Ayerst, McKenna and Harrison, Limited: *See—*
Lippmann, Wilbur, 3,670,088.
Babb, Raymond E., 1/2 to Hanscom, Genevieve I., formerly Magnuson, Genevieve I., and 1/2 to Hanscom, Genevieve I., Magnuson, Robert, Thomson, Lois J., formerly Duggan, Lois J., trustees of the estate of Magnuson, Roy M. Apparatus for sorting products according to their lengths. 3,669,263, Cl. 209-82.000
Backus, James H.: *See—*
Cornwell, Charles E.; and Backus, James H.,3,669,418.
Badami, Angelo V.; Ebert, Ekkehard,; Kemlage, Bernard M.; Kroell, Karl E.; and Pogge, H. Bernhard, to International Business Machines Corporation. Method for minimizing in expitaxial deposition. 3,669,769, Cl. 148-175.000
Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Hintz, Hans, 3,669,923.
Mueller, Herbert; Koehl, Harald; and Pommer, Horst, 3,670,028.
Wuerstlin, Franz; Feichtmayr, Franz; and Eilingsfeld, Heinz, 3,669,888.
Bagley, Brian G.; and Carides, James Nicholas, to Bell Telephone Laboratories, Incorporated. Method for the preparation of small cobalt particles. 3,669,643, Cl. 75-0.5aa
Bailey, Jennings, Jr.: *See—*
Cornwell, Charles E., 3,669,417.
Cornwell, Charles E.; and Backus, James H., 3,669,418.
Baitinger, William Frederick, Jr.: *See—*
Weyker, Robert George; Baitinger, William Frederick, Jr.; and De Marco, John Gregory,3,669,609.
Bajars, Laimonis: *See—*
Croce, Louis J.; Bajars, Laimonis; and Gabliks, Maigonis,3,670,042.
Baker, Alan Stuart; and Walbridge, Derek John, to Imperial Chemical Industries Limited. Condensation polymers. 3,669,939, Cl. 260-78.00a
Baker, Nelson H., Jr.: *See—*
Sweet, Larrie H.; and Baker, Nelson H., Jr.,3,668,831.
Baker, William H. Perimeter skimming gutter for swimming pools. 3,668,712, Cl. 4-172.170
Baker, William H. Fluid flow and/or fluid pressure responsive gate weir. 3,668,713, Cl. 4-172.170
Baker, William H. Nonflooding perimeter skimming gutter for swimming pools. 3,668,714, Cl. 4-172.170
Baldino, James Peter: *See—*
Jones, Wilford Donald; Baldino, James Peter; and Melamed, Sidney,3,670,068.
Baldwin, D. H., Company: *See—*
Mathevosian, Yervand, 3,670,325.
Baldwin, Wiley M.; and Monroe, Raymond, Jr., to Western Electric Company, Incorporated. Tantalum anodes and method of producing. 3,669,635, Cl. 29-182.000
Ball, William John; and Gasson, Edward James, to Distillers Company Limited, The. Production of unsaturated aliphatic acids. 3,670,017, Cl. 260-530.00n
Balsa Development Corporation: *See—*
Desai, Ramesh R.; and Dohn, George D., 3,669,815.
Balzers Patent- und Beteiligungs-Aktiengesellschaft: *See—*
Cremer, Erika; and Kraus, Thaddaus, 3,669,881.
Bang, Mogens W.; and Olson, David A., to Stackpole Carbon Company. Potentiometer adjustable by rotatable drum. 3,670,286, Cl. 338-180.000
Bankston, Earl F., to Cabana Theatres, Inc. Theater with separate viewing booths. 3,668,810, Cl. 52-6.000
Barber & Nicholls Limited: *See—*
Grewcock, Sidney B.; Cooper, Alan; Amos, Arthur; and Sylvester, Paul, 3,668,899.
Barber-Colman Company: *See—*
Peterson, Lawrence M., 3,669,152.
Barbour, Alfred R., to Roessing Bronze Company. Method of recovering metallic brass from the skimmings of a brass melting furnace. 3,669,647, Cl. 75-76.000
Bardutzky, Klaus, to Schneider, Jos., & Co. Iris diaphragm with extra leaf for complete closure. 3,668,995, Cl. 95-64.
Bare, Howard J. Modular heat exchanger construction. 3,669,185, Cl. 165-158.000
Barker, Ronald C., to Applied Laser Technology Incorporated. Identification means. 3,668,795, Cl. 40-2.200
Barnes, Robert L.; and Grafstein, Daniel, to Singer Company, The. High temperature bis(epoxyalkyl) carborane adhesives. 3,669,993, Cl. 260-348.000
Barny, Jean Jacques, to Societe d'Etudeset de Vente de Materiels pour la Fabrication et le Faconnage du Carton Ondule. Facility for heating a product in strip. 3,668,786, Cl. 34-43.
Barough, Victor; Glenn, Robert; and Rose, Louis, said Rose assor. to Eaton Allen Corporation. Dual purpose hectographic master unit. 3,669,019, Cl. 101-470.000
Barragan, Jacques, to Stokvis, R. S., & Fils. Lapping Machine. 3,668,813, Cl. 51-128.000
Bartmann, Otto. Coupling for webs. 3,668,742, Cl. 24-33.00c
Bartsch, Raymond C.; and Lerman, Frank, to National Distillers and Chemical Corporation. Process for the preparation of colored polymer powders of controlled charge and printing characteristics. 3,669,922, Cl. 260-41.000
Barzely, Avner, 40% to Kunik, I. Jordan. Underdamped audio phase shift oscillator for increasing selectivity of radio receiver. 3,670,254, Cl. 330-107.000
Bascomb, Hollis H.; and Greci, John J., to Orcon Corporation. Process for making non-woven fabrics. 3,669,790, Cl. 156-162.000
Bashaw, Robert Niles: *See—*
Harper, Billy Gene; Bashaw, Robert Niles; and Atkins, Bobby Leroy,3,669,103.
Bass, Miles M., to Hammond Machinery Builders, Inc. Oscillating spindle seal. 3,669,459, Cl. 277-174.
Batson, William A.; and Fromknecht, Charles T., to Singer Company, The. Vacuum cleaner and exhaust housing. 3,668,842, Cl. 55-417.000
Battelle Memorial Institute: *See—*
Beccu, Klaus, 3,669,745.
Batzer, Hans: *See—*
Reber, Willy Ernst; Nigst, Henry; Haas, Josef; Batzer, Hans; and Zuppinger, Paul,3,669,708.
Baughman, Davis L.; and Carpenter, James H., to Carborundum Company, The. Shot peening apparatus. 3,668,912, Cl. 72-53.000
Baum, Heinz, to Jansen Th., G.m.b.H. Flap valve. 3,669,405, Cl. 251-279.000
Bauman, William C., to Dow Chemical Company, The. Bipropellant rocket process using nitridable fuel. 3,668,873, Cl. 60-211.000
Baumans, Hans W.: *See—*
Glegg, Keith C. M.; Haberl, John F.; Baumans, Hans W.; and Piibe, Rein,3,670,329.
Baumgartner, Ronald R.: *See—*
Sanders, James F.; Baumgartner, Ronald R.; and Farago, Laszlo D.,3,669,706.
Baxter, David W., Jr., to Textron Inc. Metal to metal seal for extreme temperature applications. 3,669,408, Cl. 251-359.000
Baxter, Larry K.; and Asano, Shintaro, to Shintron Company, Inc. Graphical input tablet. 3,670,103, Cl. 178-19.000

Beach, Horace J.; En Dean, Howard J.; Frawley, Frank E.; and Yates, Dick, to Gulf Research & Development Company. Cement composition for lining pipe. 3,669,700, Cl. 106-98.000

Beach, Sidney C., to Chemetron Corporatinon. Coumarin-carrier addition agent for nickel baths. 3,669,853, Cl. 204-49.000

Beadle, William E.; Benson, Kenneth E.; Mathews, James R.; and Von Ohlsen, Louis H., Jr., to Bell Telephone Laboratories, Incorporated. Fabrication process for light sensitive silicon diode array target. 3,669,768, Cl. 148-187.000

Bean, Claude T., Jr.: *See—*
Dorfman, Edwin; Emerson, William E.; Bean, Claude T., Jr.; and Carr, Russell L. K.,3,669,941.

Beardsley, Melville W. Impulse turbine propulsion device for marine craft. 3,669,565, Cl. 416-185.

Beaud, Jean-Louis, to Hasler A.G. Adjusting and controlling reed relays. 3,670,131, Cl. 219-7.5

Beaudin, Dale A. Container. 3,669,168, Cl. 150-0.500

Beausoleil, William F.; Brown, David T.; and Walker, Ernest L., to International Business Machines Corporation. Dynamically ordered magnetic bubble shift register memory. 3,670,313, Cl. 340-174.0tf

Beautiline Showcase Systems: *See—*
Frank, Peter M.; and Watts, Frank M., 3,668,830.

Bebo, Vernon H. Link chain detacher. 3,668,767, Cl. 29-283.

Beccu, Klaus, to Battelle Memorial Institute. Accumulator electrode with capacity for storing hydrogen and method of manufacturing said electrode. 3,669,745, Cl. 136-20.

Beckerer, Frank S. Sealed plunger-type pump. 3,669,575, Cl. 417-555.

Beckman Instruments, Inc.: *See—*
Coelho, Norman C.; and Thompson, Brian, 3,668,935.

Beesley, William N., Jr. Cabinet storage racks. 3,669,277, Cl. 211-49.00d

Behrens, William H.: *See—*
Buttke, Richard A.; Sabatino, Anthony; Orlando, Daniel; and Behrens, William H.,3,668,761.

Beidler, Glenn S., to Pneumo Dynamics Corporation. Actuator lock. 3,668,977, Cl. 92-17.000

Beinfest, Sidney; Jacura, Zenon; and Adams, Phillip, to Millmaster Onyx Corporation. Continuous process for the preparation of phosphonitrilic chloride cyclic polymers. 3,669,633, Cl. 23-357.000

Bejach, Benton, to Borg-Warner Corporation. Motor control system with compensation for low- frequency variations in motor energizing voltage. 3,670,235, Cl. 321-18.000

Belart, Juan: *See—*
Marschall, Helmut; Kammermayer, Wolfgang; Beller, Hans Albert; Hahm, Heinz; and Belart, Juan,3,669,226.

Belart, Juan; and Seidel, Ulrich, to ITT Industries, Inc. Warning device for dual circuit hydraulic brake systems. 3,670,122, Cl. 200-82.00d

Belgonucleaire, S.A.: *See—*
De Boeck, Paul; Marteel, Bernard; and Schrijvers, Jozef, 3,669,833.

Bell & Howell Company: *See—*
Figge, Erwin E.; Lancor, Joseph H., Jr.; and Lodge, Edward H., 3,669,532.

Bell Canada: *See—*
Leyburn, Derek; Montague, Bernard R.; and Mattila, Henry K., 3,670,109.

Bell, James C., Jr., to Goodyear Aerospace Corporation. Mechanically operated erectable structure. 3,669,368, Cl. 242-54.00a

Bell, Leo A. Apparatus for indicating torque applied to pipe rotated by a rotary table. 3,668,926, Cl. 73-136.00r

Bell, Sydney George Frederick, to Grace, W. R., & Co. Shrink tunnel and method of shrinking film on articles. 3,668,817, Cl. 53-30.000

Bell Telephone Laboratories, Incorporated: *See—*
Bagley, Brian G.; and Carides, James Nicholas, 3,669,643.
Beadle, William E.; Benson, Kenneth E.; Mathews, James R.; and Von Ohlsen, Louis H., Jr., 3,669,768.
Bukosky, Allen A.; Flavin, Michael A.; Hill, Donald G.; Huizinga, Donald D.; and Ritchey, James F., 3,670,111.
Candy, James Charles; Franke, Gladys Marie; and Mounts, Frank William, 3,670,096.
Duguay, Michel Albert, 3,669,541.
Hackett, William H., Jr.; Schafetter, Donald L.; and Varnerin, Lawrence J., Jr., 3,669,767.
Hirsch, Peter, 3,670,335.
Kaminow, Ivan Paul, 3,670,166.
Kinsel, Tracy Stewart, 3,670,165.
Lepselter, Martin Paul, 3,669,730.
Peters, Frank Groom; Sinclair, William Robert; and Sullivan, Miles Vincent, 3,669,863.
Porter, Roy A., 3,669,775.
Sell, Darrell Dean, 3,669,547.
Tutelman, David Morris, 3,670,308.
Winters, Earl D., 3,669,852.

Bellem, Norman A.: *See—*
Conway, Maurice A.; Perkins, Carl C., Jr.; and Bellem, Norman A.,3,669,051.

Beller, Hans Albert: *See—*
Marschall, Helmut; Kammermayer, Wolfgang; Beller, Hans Albert; Hahm, Heinz; and Belart, Juan,3,669,226.

Beltek Kabushiki Kaisha: *See—*
Oteki, Yuzo, 3,669,456.

Benaroya, Henry. Tandem, free-piston machine. 3,669,571, Cl. 417-341.000

Benckiser, Joh A., G.m.b.H.: *See—*
Zeiss, Otto, 3,670,000.

Bendix Corporation, The: *See—*
Ensslin, Frieder H., 3,669,812.
Slavin, Michael; and Carp, Ralph W., 3,669,403.

Bennett, Michael Camm; and Gardiner, Sidney David, to Tate & Lyle Limited. Manufacture of aragonite. 3,669,620, Cl. 23-66.000

Benson Equipment Co., Inc.: *See—*
Benson, Ernest J.; and Fischer, Charles G., 3,668,821.

Benson, Ernest J.; and Fischer, Charles G., to Benson Equipment Co., Inc. Cutting and wrapping machine. 3,668,821, Cl. 53-123.000

Benson, Kenneth E.: *See—*
Beadle, William E.; Benson, Kenneth E.; Mathews, James R.; and Von Ohlsen, Louis H., Jr.,3,669,768.

Benteler, Helmut; Franz-Josef; and Hefendehl, Heinz, to Benteler-Werke Aktiengesellschaft. Method for manufacturing shafts for vehicles. 3,668,918, Cl. 72-364.000

Benteler-Werke Aktiengesellschaft: *See—*
Benteler, Helmut; Franz-Josef; and Hefendehl, Heinz, 3,668,918.

Benward, Harold. Compact tackle and utility box. 3,668,802, Cl. 43-57.500

Berard, Raymond A.: *See—*
Castner, Claire J.; Russo, Robert V.; and Berard, Raymond A.,3,670,050.

Berestovoi, Anatoly Mikhailovich: *See—*
Ivchenko, Georgy Semenovich; Berestovoi, Anatoly Mikhailovich; Khanchas, Vladislav Fedorovich; and Nikodimov, Anatoly Pavlovich,3,669,317.

Bereza, Albert: *See—*
Cherry, Sidney J.; Bereza, Albert; and Wayland, Paul O.,3,670,129.

Berg, Nils-Christian; and Soininen, Mauri Aatos, to Valmet Oy. Ventilating device for a multicylinder drier. 3,668,787, Cl. 34-111.000

Berg, Quentin. Terminal tab strip and applicator. 3,669,332, Cl. 227-80.000

Berger, Charles V., to Universal Oil Products Company. HF Extraction and asphaltene cracking process. 3,669,876, Cl. 208-87.000

Bergmann, Hermann Gustav Adolf, to Libu Shovel Co., A.G. Coupling or locking means. 3,669,481, Cl. 292-49.000

Berndt, Hans; and Kreuzer, Hubert, to Neuweg Fertigungs GmbH. Hydraulic remote control device. 3,668,871, Cl. 60-54.500

Bernitz, Bernhard, to Continental Gummi-Werke Aktiengesellschaft. Bumper for motor vehicles. 3,669,484, Cl. 293-71.00r

Berriman, Lester P., to Dresser Industries, Inc., mesne. Fluid separation apparatus and method. 3,669,879, Cl. 210-23.000

Berry, Currie B., Jr., to Ethyl Corporation. Foamed metal. 3,669,654, Cl. 75-20.00f

Berthelat, Robert J., to Societe Anonyme dite: Etablissements Jacques Berthelat & Fils. Roller conveyor. 3,669,242, Cl. 198-127.00r

Bertolet, Doris Y. Floor preserving shoe for platform rockers and the like. 3,669,490, Cl. 297-272.000

Besson, Jean R.; Cumer, Joseph F.; and Hoarau, Roland J., to Office National d'Etudes et de Recherches Aerospatiales. Opto-electronic device for the remote measurement of the shifts of a movable object. 3,669,549, Cl. 356-152.000

Betts, Max William; and Robinson, Frank, to Courtaulds Limited. Knitting of garments. 3,668,896, Cl. 66-70.

Betts, Max William; and Robinson, Frank, to Courtaulds Limited. Knitting methods. 3,668,898, Cl. 66-70.

Betts, Max William; and Robinson, Frank, to Courtaulds Limited. Knitting method and knitting garment. 3,668,901, Cl. 66-176.000

Beuk, Ljubomir; Dogadko, Peter; and Sansbury, Larry, to Motorola, Inc. Solid state ignition system. 3,669,086, Cl. 123-148.00e

Bev Maid, Inc.: *See—*
Asen, Donald B., 3,669,001.

Bharwani, Bansi U.; and Kaplowitz, Harry, to Infodata Systems Incorporated. Method for information storage and retrieval. 3,670,310, Cl. 340-172.500

Bibeau, James K.: *See—*
Reynolds, Robert W.; Bibeau, James K.; and Jansen, Francis J.,3,669,072.

Bickel, John: *See—*
Catalano, Paul; and Bickel, John,3,669,374.

Biederman, Edwin W., Jr., to Cities Service Oil Company. Light weight cements for oil wells. 3,669,701, Cl. 106-120.000

Biederman, Stuart J.; and Jezewski, Walter E., to North American Philips Corporation. Air operated terminal insertion device. 3,668,760, Cl. 29-203.00b

Bielomatik Leuze & Co.: *See—*
Negro, Guido, 3,669,583.

Bien, Hans-Samuel; and Klauke, Erich, to Farbenfabriken Bayer Aktiengesellschaft. Reactive azo dyestuffs containing a- fluoropyimidinyl group. 3,669,951, Cl. 260-146.4

Bilabel, Friedrich. Band filter with vacuum suction chamber. 3,669,272, Cl. 210-152.

Billeter, Henry R., to Sloan Valve Company. Automatic double acting slack adjusters. 3,669,224, Cl. 188-202.000

Billings, Raymond T. Continuous transfer process for coating rigid elongate work. 3,669,793, Cl. 156-238.000

Billings, Roy O. Pressure plate and linkage connection between a dipper stick and an implement. 3,669,287, Cl. 214-147.00g

Bilow, Norman, to Hughes Aircraft Company. Method of preparing aromatic resins and products thereof. 3,669,929, Cl. 260-47.00r

Binder, Dieter: *See—*
Hromatka, Otto; and Binder, Dieter,3,669,959.

Binswanger Glass Co.: *See—*
Rupprecht, Charles F.; and Wiker, Frank, 3,668,955.

Bio-Science Laboratories: *See—*
Thiers, Ralph E.; and Meyn, Julius, Jr., 3,669,626.

Bischoff, Dieter, to Freudenberg, Carl. Carpet material. 3,669,819, Cl. 161-66.000

Bishop, William A., to Copolymer Rubber & Chemical Corporation. Free flowing pellets of uncured elastomeric material. 3,669,722, Cl. 117-100.00c

Black, Robert B. Water heater. 3,669,079, Cl. 122-136.00r

Blackburn, Denis Edward: *See—*
Rhodes, Arthur Neville; and Blackburn, Denis Edward,3,669,367.

Blackstone Manufacturing Co., Inc.: *See—*
Podraza, Chester S., 3,669,326.

Blanchet, James P.; Hotes, Charles M.; and Reynolds, Thomas J., to Western Gear Corporation. Pipe tensioning unit. 3,669,329, Cl. 226-108.000

Blase, Emil F., to Sangamo Electric Company. Electrolytic capacitor having a heat dissipating center therefor. 3,670,210, Cl. 317-230.

Blaupunkt-Werke GmbH: *See—*
Bragas, Peter, 3,670,113.

Blom-Bakke, Arne. Aircraft instruments. 3,668,933, Cl. 73-386.000

Blommendaal, Ronald, to Christiaan Huygenslaboratorium N.V. Direction finding device. 3,670,332, Cl. 343-16.00r

Blue, Donald E. Portable band saw. 3,668,961, Cl. 83-201.040

Blymiller, Earl R.: *See—*
Whipple, Douglas W.; and Blymiller, Earl R.,3,668,956.

Boast, Derek Walter. Methods of forming pipe joints. 3,668,754, Cl. 29-157.000

Bode, Richard M. Coupled joint of axially aligned elongated members. 3,669,474, Cl. 285-365.000

Boettcher, Alfred. Coated-particle fuel and fertile element for nuclear reactors and method of operating same. 3,669,832, Cl. 176-68.000

Bogash, Richard; Wolf, Milton; and Sellstedt, John H., to American Home Products Corporation. 2-Amido-6-amino penicillanic acids and related compounds. 3,669,980, Cl. 260-304.000

Bohme Chemie Gesellschaft mbH: *See—*
Rall, Ulrich; Frotscher, Herbert; and Petzold, Manfred, 3,669,702.

Boise Cascade Corporation: *See—*
Achermann, Werner; and Achermann, Franz, 3,669,067.
Hoelzinger, Walther J.; Wenninger, Johann; Mayer, Walter; Zoegernitz, Karl; Schroetter, Hermann; and Braun, Werner, 3,669,064.

Boksjo, Carl Ingvar; and Sehman, Bengt Allan, to Allmanna Svenska Elektriska Aktiebolaget. Thyristor with a control device and having several control electrodes. 3,670,217, Cl. 317-235.00r

Bologna, John P.: *See—*
Bowser, George H.; Shoop, Vernon A.; Pyzewski, Stanley J.; Mazzoni, Renato J.; and Bologna, John P.,3,669,785.

Bolster, Keith G. Fireplace grate for burning papers. 3,669,092, Cl. 126-165.000

Boltze, Karl-Heinz; and Lorenz, Dietrich, to Troponwerke Dinklage & Co. Pharmacologically active quinazolinone compound, its use in pharmacological preparations and process for its preparation. 3,669,967, Cl. 260-256.40q

Bondahl, Gary B.: *See—*
Dunnahoe, Richard G.; Bondahl, Gary B.; and Roth, Paul W.,3,669,741.

Boost, Charles C.; Mitchell, William S.; and Horton, David M., to Koch, George, Sons, Inc. Electrocoating equipment. 3,669,870, Cl. 204-297.

Borck, Joachim; Dahm, Johann; Koppe, Volker; Kramer, Josef; Shorre, Gustav; Hovy, J. W. Hermann; and Schorscher, Ernst, to Merck, E., A.G. 4-Substitutedamino-phenylacetic acids and derivatives thereof. 3,669,956, Cl. 260-239.0bf

Borck, Joachim; Dahm, Johann; Koppe, Volker; Kramer, Josef; Schorre, Gustav; Hovy, Jan Willem; and Schorscher, Ernst, to Merck Patent Gesellschaft mit beschrankter Haftung. P-Aminoarylalkanal derivatives. 3,669,972, Cl. 260-293.730

Borck, Joachim; Dahm, Johann; Koppe, Volker; Kramer, Josef; Schoree, Gustav; Hovy, Jan Willem Herman; and Schorscher, Ernst, to Merck Patent Gesellschaft mit beschrankte r Haftung. Antiphlogistic p-aminoarylalkanol derivatives. 3,669,973, Cl. 260-293.730

Bordat, Andre Jules Edmond, to Societe Nationale Industrielle Aerospatiale. Apparatus for the production of members having a smooth sheating and of accurate shape, and their applications to the structural elements of submerged foils. 3,669,589, Cl. 18-42.00d

Borg-Warner Corporation: *See—*
Bejach, Benton, 3,670,235.

Bosch, Robert, G.m.b.H.: *See—*
Hofmann, Eberhard, 3,668,945.
Nagele, Erwin, 3,670,280.
Pfluger, Gerhard, 3,670,173.

Botta, Artur: *See—*
Krimm, Heinrich; Botta, Artur; and Schneill, Hermann,3,670,024.

Bottenbruch, Ludwig: *See—*
Senge, Ferdinand; Weirauch, Kurt; and Bottenbruch, Ludwig,3,670,051.

Boudreau, Alban M., to Hedstrom Company. Carriage pusher handle release. 3,669,463, Cl. 280-47.370

Bouilly, Charles: *See—*
Copin, Robert; Sinn, Robert; and Bouilly, Charles,3,669,641.

Bourboulis, Cedric D. Surface texturizer. 3,669,069, Cl. 118-102.000

Bourguet, Jean M.; and Hart, Francis D., to Mobil Oil Corporation. Catalytic cracking process. 3,669,903, Cl. 252-455.

Bourquardez, Gaston; and Coffy, Rene Louis, to Societe Nationale Industrielle Aerospatiale. Rotor construction. 3,669,566, Cl. 416-134.000

Boux, Joseph F.: *See—*
Pennachetti, John T.; and Boux, Joseph F.,3,669,703.

Bowen, John C., to Duriron Company, Inc., The. Diaphragms for high pressure compressors and pumps. 3,668,978, Cl. 92-98.000

Bowser, George H.; Shoop, Vernon A.; Pyzewski, Stanley J.; Mazzoni, Renato J.; and Bologna, John P., to PPG Industries, Inc. Method for fabricating a multiple glazed unit. 3,669,785, Cl. 156-109.000

Bradley, Richard S., to Art's-Way Manufacturing Company Incorporated. Vehicle coupling weighing device. 3,669,756, Cl. 177-136.000

Bradshaw,Carleton R.; and Felsher, Hal-Curtis. Press for coating metal flakes. 3,669,764, Cl. 148-6.15r

Bradshaw, Carleton R.; and Felsher, Hal-Curtis. Process for coating metal flakes. 3,669,765, Cl. 148-6.160

Bragas, Peter, to Blaupunkt-Werke GmbH. Video transducer head alignment apparatus. 3,670,113, Cl. 179-100.20b

Bragg, Cecil: *See—*
Derc, Roman; Eitel, Ronald John Frank; and Bragg, Cecil,3,669,446.

Bragg, Herbert E., to De Luxe General Incorporated. Reflective condensing system for concentrating illumination at an aperture. 3,670,157, Cl. 240-41.350

Brand, Warren L., to Motorola, Inc. Method of vapor depositing a tungston-tungsten oxide coating. 3,669,724, Cl. 117-106.00r

Brand, Warren L. Vapor-plated cermet resistor. 3,669,737, Cl. 117-227.000

Brandi, Henry W., to Wagner Electric Corporation, mesne. Container and blank therefor. 3,669,259, Cl. 206-65.00f

Bratton, Francis H., to Aprand, Inc. Patient riser. 3,668,723, Cl. 5-327.000

Braumann, Gundokar; Klor, Walter; and Huber, Albert, to Siemens Aktiengesellschaft. Relay switching apparatus. 3,670,272, Cl. 335-112.000

Braun Aktiengesellschaft: *See—*
Hofmann, Erich; Krull, Ernst; Johannsen, Werner Hans; Oberheim, Robert; and Scheibel, Josef, 3,669,534.

Braun, Jurgen: *See—*
Uhlig, Fritz; and Braun, Jurgen,3,669,659.

Braun, Werner: *See—*
Hoelzinger, Walther J.; Wenninger, Johann; Mayer, Walter; Zoegernitz, Karl; Schroetter, Hermann; and Braun, Werner,3,669,064.

Brechbuhler, Hans Ulrich: *See—*
Gubler, Kurt; Meyer, Urs; and Brechbuhler, Hans Ulrich,3,669,976.

Breeden, James A., to Vendo Company, The. Malfunction isolation apparatus for selective vending machines. 3,669,235, Cl. 194-10.000

Breger, William N. Environmental control capsule and system therefor. 3,669,091, Cl. 128-1.

Breitenmoser, Jurg: *See—*
Daume, Eduard; and Breitenmoser, Jurg,3,669,924.

Breslin, Mary Anne; Cogar, George R.; Lee, Charles A.; Neddenriep, Donald O.; Romeo, Albert J.; Sevilla, Ernesto G.; and Sekse, Torkjell, to Sperry Rand Corporation. Electronic plugboard controlled data processor. 3,670,144, Cl. 235-61.9

Breslow, David S., to Hercules Incorporated. Polyfunctional carbonyl nitride oxides. 3,670,023, Cl. 260-566.00a

Bretsch, Michael A.: *See—*
Podiak, Richard S.; Mack, James M.; and Bretsch, Michael A.,3,668,749.

Brichard, Edgard; and Declaye, Joseph, to Glaverbel. Refractory elements for a glass float furnace wall. 3,669,640, Cl. 65-182.00r

Bridgeford, Douglas J., to Tee-Pak, Inc. Gas release from cellulose casing by multiple perforations. 3,669,791, Cl. 156-244.000

Briggs, John A.; and Ward, Ronald C., to Telemation, Inc. Automatic reference level set for television cameras. 3,670,100, Cl. 178-7.100

Briscoe, Josiah Alfred, to Imperial Chemical Industries Limited. Method and apparatus for spreading and counting filaments in a yarn. 3,669,552, Cl. 356-199.

Bristol-Myers Company: *See—*
Holdrege, Charles Truman, 3,669,958.

British Aircraft Corporation Limited: *See—*
Rhodes, Arthur Neville; and Blackburn, Denis Edward, 3,669,367.

British Scientific Instrument Research Association: *See—*
Dunn, Geoffrey Bernard; and York, Leonard Ernest, 3,669,048.

British Steel Piling Company Limited, The: *See—*
Elliott, Roger M., 3,669,198.

Brizzolesi, Gustavo, to Societa Applicazioni Gomma Antivibranti 'SAGA' S.p.A. Flexible couplings. 3,668,891, Cl. 64-12.

Broadbent, Berne D., to Hughes Aircraft Company. Write station for a magnetic storage medium. 3,670,312, Cl. 340-174.0sr

Broadbent, Kent D.: *See—*
Johnson, Keith O.; and Broadbent, Kent D.,3,670,114.

Broadfoot, John T. Deep water pumping of fluids and semifluids. 3,669,574, Cl. 417-477.000

Brodie, Mary G.: *See—*
Keyl, Alex C.; and Brodie, Mary G.,3,669,716.

Broecker, Bernhard, to Reichhold-Albert-Chemie Aktiengesellschaft. Epoxy resins etherifed with ethylenically unsaturated alcohols and copolymerized with carboxy containing monomers. 3,670,047, Cl. 260-837.

Broido, Jacques. Bracelet with plurality of interchangeable coupling members for varying the length thereof. 3,668,890, Cl. 63-3.000

Brooke, David W. I., to International Harvester Company of Great Britain Limited, mesne. Vehicle guidance systems. 3,669,205, Cl. 180-98.000

Brooke, David William Ingham, to International Harvester Company of Great Britain Limited, mesne. Vehicle guidance systems. 3,669,208, Cl. 180-98.000

Brooke, David William Ingham, to International Harvester Company of Great Britain Limited, mesne. Vehicle guidance systems. 3,669,209, Cl. 180-98.000

Brown & Root, Inc.: *See—*
Jones, Jerry J.; Keenon, Delbert L.; Morgan, William A.; and Lochridge, Joe C., 3,668,878.
Koehler, Albert M., 3,668,876.

Brown, Carl A., to Parker-Hannifin Corporation. Fluid filter device. 3,669,268, Cl. 210-90.000

Brown, David T.: *See—*
Beausoleil, William F.; Brown, David T.; and Walker, Ernest L.,3,670,313.

Brown, Gaylor W., to Koehring Company. Apparatus for forming protrusions with enlarged head portions in thermoplastic sheet material. 3,669,606, Cl. 425-398.

Brown, Gaylord W., to Koehring Company. Apparatus and methods for friction welding plastic parts which require a particular relative angular orientation. 3,669,809, Cl. 156-582.000

Brown, Gaylord W.; Russell, Edward J.; Howe, Charles E.; and Schnepp, Bradley A., to Koehring Company. Module thermoforming machine. 3,669,594, Cl. 425-186.

Brown, James D.; and Uraneck, Carl A., to Phillips Petroleum Company. Pressure sensitive cohesion. 3,669,798, Cl. 156-334.000

Brown, John J., Jr., to Forrest Paschal Machinery Company. Method and apparatus for dehacking brick. 3,669,283, Cl. 214-8.50c

Brown, Robert S., II, to Federal Screw Works. Form tool holder. 3,668,954, Cl. 82-36.000

Brown, Robin Lawford: *See—*
Parr, Norman Lawrence; and Brown, Robin Lawford,3,669,723.

Bruelemans, Karel Bernard Marie, to Fabrique Nationale d'Armes de Guerre, Societe Anonyme. Device for actuating the narrowing points of two needle bed knitting machines. 3,668,895, Cl. 66-70.000

Bruner, Peter Martin, to AMP Incorporated. Tandem mating receptacles. 3,670,289, Cl. 339-91.00r

Bruno, Achille: *See—*
Cuffaro, Antonino; Castronovo, Francesco; Bruno, Achille; and Rancati, Gianluigi,3,670,060.

Brunswick Corporation: *See—*
Stein, Alex H.; and Coder, William D., Jr., 3,670,049.

Bruton, John M., to Eastman Kodak Company. Web or strip material handling apparatus. 3,669,375, Cl. 242-75.400

Bryan, Darrel L.: *See—*
Dunlap, Dennis L.; and Bryan, Darrel L.,3,669,467.

Bryan, Darrel L.; and Maisch, Larry D., to Pacific Car and Foundry Company. Flexible leap springs for kickers and clamps for log stackers. 3,669,293, Cl. 214-767.000

Bryant, James G., to Bryant-Poff, Inc. Bucket elevator with grain cleaner. 3,669,264, Cl. 209-138.000

Bryant-Poff, Inc.: *See—*
Bryant, James G., 3,669,264.

Buce, Walter F. Apparatus and method for sealing a vessel opening. 3,669,055, Cl. 114-229.000

Bucher, Paul E.; and Picunko, Thomas, to Union Carbide Corporation. Analog data reduction circuit for a rotating spectrophotometer wherein the light passing through a selected chamber is compared with all others. 3,669,551, Cl. 356-197.000

Buckman, John D.: *See—*
Buckman, Stanley J.; Buckman, John D.; Pera, John D.; and Raths, Fred W.,3,670,004.

Buckman Laboratories, Inc.: *See—*
Buckman, Stanley J.; Buckman, John D.; Pera, John D.; and Raths, Fred W., 3,670,004.
Pera, John D.; and Raths, Fred W., 3,669,981.

Buckman, Stanley J.; Buckman, John D.; Pera, John D.; and Raths, Fred W., to Buckman Laboratories, Inc. Thiocyano substituted acrylates and propionates and their use as pesticides. 3,670,004, Cl. 260-454.000

Bucksbaum, Arnold M., to Amana Refrigeration, Inc. Microwave oven no-load sensor. 3,670,134, Cl. 219-10.550

Budman, Moisei Izrailevich; Kaganovsky, Frederik Isaakovich; Kapitanov, Nikolai Ivanovich; Karzov, Jury Nikolaevich; Nadtochenko, Andrei Fedorovich; Slavetsky-Kotvitsky, Eduard Sebostyanovich; and Shorokhov, Leonid Pavlovich. Stirrup frame for hydraulic press. 3,668,921, Cl. 72-455.

Bujor, Eugen: *See—*
Horer, Oswald; and Bujor, Eugen,3,669,554.

Bukosky, Allen A.; Flavin, Michael A.; Hill, Donald G.; Huizinga, Donald D.; and Ritchey, James F., to Bell Telephone Laboratories, Incorporated. Repertory dialer telephone set with register storage of the digits. 3,670,111, Cl. 179-90.00b

Bulharowski, John Francis, to Sylvania Electric Products, Inc. Film scanning system linearity apparatus. 3,670,101, Cl. 178-7.200

Bunker, Robert W. Lockable assembly and rake-cultivator implement for using same. 3,668,849, Cl. 56-400.170

Burgard, Ernst; and Gross, Jurnjochen, to International Standard Electric Corporation. Multiple holding arrangement. 3,669,279, Cl. 211-41.000

Burke, William E.: *See—*
Cullen, Roy H.; Aker, Jimmie R.; and Burke, William E.,3,669,199.

Burkhalter, Robert, Jr.; Heskett, Don Edward; and Hoover, Frank Kryder, to Morton-Norwich Products, Inc., mesne. Bypass valve for fluid treating assembly. 3,669,148, Cl. 137-625.290

Burkhardt, Charles E.: *See—*
Millsop, William Q.; Ellis, Belvin B.; and Burkhardt, Charles E.,3,670,279.

Burkhardt, Walter; and Wedler, Herbert, to Lohmann & Stolterfoht Aktiengesellschaft. Drive for ships. 3,669,230, Cl. 192-48.800

Burlington Industries, Inc.: *See—*
Fusco, Vito A.; Ogden, Charles T.; and Illman, Walter F., 3,668,852.

Burney, Charles F., to GTE Sylvania Incorporated. Method of reducing self-generated electrical noise in coaxial cable. 3,670,058, Cl. 264-22.000

Burr, John F. Hoist conversion unit for small tractors. 3,669,410, Cl. 254-139.100

Burr, Robert C.: *See—*
Jones, Duane A.; Fanta, George F.,; and Burr, Robert C.,3,669,915.

Burton, Derek Arthur, to Johnson, A., & Company (London) Limited. Electrolytic cells. 3,669,869, Cl. 204-268.

Buss AG: *See—*
Sutter, Fritz; and Maier, Andreas, 3,669,416.

Butler, Gerald V., Jr.: *See—*
Aumann, Frederick C., III; and Butler, Gerald V., Jr.,3,670,311.

Butler, James W., to Laurentian Concentrates Limited. Foam protection of plant life. 3,669,898, Cl. 252-307.

Butler Manufacturing Company: *See—*
Conway, Maurice A.; Perkins, Carl C., Jr.; and Bellem, Norman A., 3,669,051.

Buttke, Richard A.; Sabatino, Anthony; Orlando, Daniel; and Behrens, William H., to Globe-Union, Inc. Machine for manufacturing electric storage batteries. 3,668,761, Cl. 29-204.00d

Cabana Theatres, Inc.: *See—*
Bankston, Earl F., 3,668,810.

Cahill, William Francis, Jr. Apparatus and method for incinerating rubbish and cleaning the smoke of incineration. 3,668,833, Cl. 55-7.000

Cahn, Jean, to MAR-PHA, Societe d'Etude et d'Exploitation de Marques.Anti-depressant pharmaceutical composition containing N-[3,4-di(alkoxycarbonyl) cinnamyl] iminodibenzyl as the active ingredient. 3,670,081, Cl. 424-244.

Cal-Val Co.: *See—*
Reese, James R., 3,669,143.

Calame, Jean Pierre; and Siddall, John B., to Zoecon Corporation. 10-oxo-11-alkylidene-337-dialkyl-2,6- alkadienoic acids and esters thereof. 3,669,997, Cl. 260-410.90r

Calame, Jean Pierre: *See—*
Siddall, John B.; and Calame, Jean Pierre,3,669,996.

Caldo, Cornelio; Danielli, Ezio; Incollingo, Italo; and Protospataro, Francesco, to Montecatini Edison S.p.A. Paper and paper-like fibrous structures from mixtures of natural, artificial and synthetic fibers. 3,669,829, Cl. 162-146.

Callard & Bowser Limited: *See—*
Waters, Peter Donald, 3,669,030.

Calmic Limited: *See—*
O'Hara, James; and Gibbins, Charles Lewis, 3,668,716.

Caltagirone, Saverio, to General Electric Company. Apparatus for winding electrical coils. 3,669,380, Cl. 242-158.00r

Calusen, Victor H.; and Zweig, Arnold, to Simpson Timber Company. Apparatus for bonding continuous flexible strands coated with a thermoplastic adhesive to the surface of moving veneer strips. 3,669,804, Cl. 156-544.000

Calusen, Victor H.: *See—*
Jarvis, Richard L.; Kully, Walter; Calusen, Victor H.; Zweig, Arnold; and Engvoll, Sverre,3,669,803.

Calvino y Teijeiro, Benito Jose, to MAGRINI Fabbriche Riunite Magrini-Scarpa e Magnano M.S.M., S.p.A. Blast orifice unit for self-blasting compresses gas electric circuit-breakers. 3,670,124, Cl. 200-148.00r

Calvino y Teijeiro, Benito Jose, to MAGRINI Fabbriche Ruinite Magrini-Scarpa e Magnano M.S.M., S.p.A. Blast nozzle for self-blasting compressed gas electric circuit-breakers. 3,670,125, Cl. 200-148.00r

Cam Gears Limited: *See—*
Adams, Frederick J., 3,669,146.

Cambridge Chemical Products, Inc.: *See—*
Mauthner, Thomas, 3,670,072.

Cameli, Nazzareno; Longi, Paolo; Valvassori, Alberto; and Flisi, Umberto, to Goodrich, B. F., Company, The. Compositions comprising a mixture of sulfur- vulcanizable ethylene/propylene/dicyclopentadiene copolymers with sulfur vulcanizable ethylene/propylene/ butadiene copolymers. 3,670,055, Cl. 260-889.000

Camp, Albert T.; and McCone, Alan, Jr. Solid propellant rocket. 3,668,872, Cl. 60-207.000

Canadian Marconi Company: *See—*
Glegg, Keith C. M.; Haberl, John F.; Baumans, Hans W.; and Piibe, Rein, 3,670,329.

Candy, James Charles; Franke, Gladys Marie; and Mounts, Frank William, to Bell Telephone Laboratories, Incorporated. Redundancy reduction video encoding with cropping of picture edges. 3,670,096, Cl. 178-6.000

Canner, Herman M., to Sterling Detroit Company. Retrieval apparatus for die casting equipment. 3,668,941, Cl. 74-89.170

Cape, Arthur T., to Coast Metals, Inc. Ferrous base alloy. 3,669,653, Cl. 75-128.00d

Capellaro, David F., to Coulter Electronics, Inc., mesne. Liquid borne particle sensor. 3,669,542, Cl. 356-36.000

Capewell, William Kenneth: *See—*
Davies, Robin John; and Capewell, William Kenneth,3,669,024.

Capik, Robert J.; and Wright, Leon W., to Atlas Chemical Industries, Inc. Preparation of polyhydric alcohols from carbohydrates. 3,670,035, Cl. 260-635.00c

Cappel, Fred, to Republic Steel Corporation. Method of producing dicalcium ferrite sinter. 3,669,618, Cl. 23-51.00r

Carborundum Company, The: *See—*
Baughman, Davis L.; and Carpenter, James H., 3,668,912.
Cottis, Steve G.; Nowak, Bernard E.; and Economy, James, 3,669,738.
Sweet, Larrie H.; and Baker, Nelson H., Jr., 3,668,831.

Carides, James Nicholas: *See—*
Bagley, Brian G.; and Carides, James Nicholas,3,669,643.

Cariven, Andre Raymond Daniel. Manufacturing process for a file folder. 3,668,979, Cl. 93-1.

Carle, Jacques: *See—*
Thibault, Jean-Jacques; and Carle, Jacques,3,668,881.

Carlson, Kenneth G. Pallet loading apparatus. 3,669,282, Cl. 214-6.00p

Carlton Machine Tool Company, The: *See—*
Lehmkuhl, Robert, 3,669,556.

Carolina Narrow Fabric Company: *See—*
Woodall, Hubert C., Jr.; Freeman, Horace L.; and Goodman, Noah C., 3,669,157.

Carouge, Frithjof: *See—*
Meier, Hans; and Carouge, Frithjof,3,669,351.

Carp, Ralph W.: *See—*
Slavin, Michael; and Carp, Ralph W.,3,669,403.

Carpenter, James H.: *See—*
Baughman, Davis L.; and Carpenter, James H.,3,668,912.

Carr, Russell L. K.: *See—*
Dorfman, Edwin; Emerson, William E.; Bean, Claude T., Jr.; and Carr, Russell L. K.,3,669,941.

Carrandi, Artemio P.: *See—*
Clifton, Edward A.; and Carrandi, Artemio P.,3,668,752.

Carter, Alan, to Hydrovane Compressor Company Limited, The. Compressors. 3,669,579, Cl. 418-83.

Carter, J. Warne; and Neher, Martin Duane, to Ciba-Geigy Corporation. Pipe coupling device. 3,668,766, Cl. 29-237.000

Cartridge Television, Inc.: *See—*
Hathaway, Richard A., 3,669,384.

Cash, John H., Jr.; and Keene, Joe P., to Texas Instruments, Incorporated. R. F. discharge cleaning to improve adhesion. 3,669,861, Cl. 204-192.

Castelli, Luigi. Yarn feeding and tensioning apparatus. 3,669,328, Cl. 226-97.000

Castiglia, Ignatius F. Brace for articulated limbs. 3,669,105, Cl. 128-80.00c

Castner, Claire J.; Russo, Robert V.; and Berard, Raymond A., to Celanese Corporation. Method for production of modified oxymethylene polymers. 3,670,050, Cl. 260-860.000

Castronovo, Francesco: *See—*
Cuffaro, Antonino; Castronovo, Francesco; Bruno, Achille; and Rancati, Gianluigi,3,670,060.

Catalano, Paul; and Bickel, John, to Retention Communication Systems, Inc. Combined endless loop film and endless loop magnetic tape cartridge. 3,669,374, Cl. 242-55.19

Caterpillar Tractor Company: *See—*
Gutman, Nathan; Moser, Raymond L.; Oldenburg, Dorrance; and Sunderlin, Donald E., 3,669,161.
Little, Joseph P.; and Clouse, Jerry A., 3,669,576.
Rohweder, Gerald D.; and Windish, Willis E., 3,669,232.
Smith, Donald L., 3,669,513.
Stedman, Robert N., 3,669,172.
Witzenburg, Martion J., 3,669,458.

Caterpillar Tractor Corporation: *See—*
Updyke, Kenneth W.; and Grebner, William J., 3,670,092.

C.A.V. Limited: *See—*
Knight, Basil Edward, 3,669,360.

Cavalli, Fernando; and Cretti, Piero, to Eros Camponovo. Apparatus for manufacturing construction elements. 3,669,588, Cl. 25-41.00r

CCI Aerospace Corporation: *See—*
Marantz, Laurence B.; and Greenbaum, Michael A., 3,669,880.

Cebalo, Tony; and Alderman, John F., to Air Products and Chemicals, Inc. method for preparing 1,3,4-thiadiazole-2- ylureas. 3,669,982, Cl. 260-306.80d

Celanese Corporation: *See—*
Allman, William T., Jr.; Joseph, Charles W.; and Higgins, Ralph G., Jr., 3,669,788.
Annis, Darrell D.; Dodson, Keith D.; and Sykes, Paul M., 3,669,931.
Castner, Claire J.; Russo, Robert V.; and Berard, Raymond A., 3,670,050.
Champ, Antony E., 3,669,919.
Date, Raghunath V.; and Furness, George R., 3,669,938.

Celanese Corporation of America: *See—*
Epstein, Martin Eden; Rosenthal, Arnold Joseph; and Santangelo, Joseph Germano, 3,669,934.

Celotex Corporation, The: *See—*
White, Richard N.; and Wilkin, Joseph D., 3,668,826.

Centre Technique de l'Industrie des Papiers, Cartons et Celluloses:*See—*
Jacquelin, Guy, 3,669,011.

Ceskoslovenska akademie ved: *See—*
Emr, Antonin; and Pribil, Rudolf, 3,669,988.

Chalich, Clarles, to Taylor Manufacturing Company. Package accumulating conveyor. 3,669,241, Cl. 198-102.000

Champ, Antony E., to Celanese Corporation. Polyacrylonitrile process. 3,669,919, Cl. 260-29.6an

Champion Spark Plug Company: *See—*
Podiak, Richard S.; Mack, James M.; and Bretsch, Michael A., 3,668,749.

Chapman, Eric George Arthur, to Ilford Limited. Web-cutting apparatus. 3,668,962, Cl. 83-323.000

Charlton, Gregory G.; Hanratty, Robert J.; and Ohta, Hiram H., to International Telephone and Telegraph Corporation. Electronic technique for an all-electronic cylindrical array beacon antenna. 3,670,336, Cl. 343-106.000

Chase, Ascher, to General Foam Plastics Corporation. Pool structure with built-in externally supported step-slide. 3,668,715, Cl. 4-172.000

Chase Brass and Copper Company Incorporated: *See—*
Peters, John E.; and Rollfinke, Fred J., 3,669,634.

Cheavens, Thomas H.: *See—*
Warthen, John L.; and Cheavens, Thomas H.,3,669,624.

Cheffers, Stanley John; and Glynn, Michael Harvey, to Siebe Gorman & Company Limited. Breathing apparatus. 3,669,109, Cl. 128-147.

Chemed Corporation: *See—*
Cowen, Samuel H., 3,669,822.

Chemetron Corporatinon: *See—*
Beach, Sidney C., 3,669,853.

Chemical Construction Corporation: *See—*
Richardson, Harry L.; and Craig, Robert C., 3,668,836.

Cherry, Sidney J.; Bereza, Albert; and Wayland, Paul O., to Westinghouse Electric Corporation. Electrical contact members. 3,670,129, Cl. 200-166.00c

Cherry-Burell Corporation: *See—*
Mistarz, Robert J., 3,669,160.

Chevron Research Company: *See—*
Jaffe, Joseph; and Kittrell, James R., 3,669,873.

Chisholm, William A., to American Desk Manufacturing Company. Chair and seat and back unit therefor. 3,669,496, Cl. 297-445.000

Chisso Corporation: *See—*
Konotsune, Shiro; Kachi, Atsuyuki; Tonoike, Takao; and Mori, Kinya, 3,669,948.

Chiu, Thomas T.; Hock, Kenneth R.; and Nagle, Floyd B., to Dow Chemical Company, The. Solvent resistant alkenyl aromatic resinous shaped article. 3,669,718, Cl. 117-72.000

Cho, Young T. Honeycomb foundation. 3,668,724, Cl. 6-11.000

Christiaan Huygenslaboratorium N.V.: *See—*
Blommendaal, Ronald, 3,670,332.

Christian Rovsing A/S: *See—*
Nielsen, Lars Stig, 3,669,120.

Chrysanthis, Alex A.: *See—*
Chrysanthis, Chris A.; and Kourtoglou, George Chris, 3,669,254.

Chrysanthis, Chris A.; and Kourtoglou, George Chris, 1/4 to Chrysanthis, Alex A., and 1/4 to Haldezos, Tony. Closure structure for paper bags. 3,669,254, Cl. 206-57.

Ciba Limited: *See—*
Nachbur, Hermann; Kern, Joerg; and Maeder, Arthur, 3,669,725.

Ciba-Geigy AB: *See—*
Preininger, Erich; and Ging, Dieter, 3,669,896.

Ciba-Geigy AG: *See—*
Wegmuller, Hans; Kleemann, Alois; and Keller, Rudolf, 3,669,608.

Ciba-Geigy Corporation: *See—*
Carter, J. Warne; and Neher, Martin Duane, 3,668,766.
Marand, Jean; and Rousselot, Felix, 3,669,313.

Cicatelli, Rodolfo, to Autovox S.p.A. Tape recording device. 3,669,455, Cl. 274-4.00e

Cincinnati Milacron Inc.: *See—*
Dever, Lewis A., 3,668,971.

Cities Service Company: *See—*
Levine, Ralph, 3,669,999.

Cities Service Oil Company: *See—*
Biederman, Edwin W., Jr., 3,669,701.

Clare, John Dickens; and Marsh, Stanley Bruce, to United Kingdom of Great Britain and Northern Ireland, Minister of Supply in Her Majesty's Government of the. Continuous wave radar systems. 3,670,327, Cl. 343-8.000

Clark, Alfred Charles. Preparation of artwork masters. 3,668,762, Cl. 29-203.00b

Clark, James T., to Clark-Feather Manufacturing Co. Automotive valve spring compressing tools. 3,668,765, Cl. 29-219.000

Clark-Feather Manufacturing Co.: *See—*
Clark, James T., 3,668,765.

Clarke, Fredric B.; and Lyons, John W., to Monsanto Company. Inhibiting agents, washing compositions and solutions containing the same, and processes for using the same. 3,669,893, Cl. 252-156.000

Clayson N.V.: *See—*
De Coene, Frans J.; and Strubbe, Gilbert J., 3,669,124.
DeCoene, Frans J., 3,669,291.

Clements, Richard F., to Environmental Control Products, Inc. Access door control apparatus for controlled emission incinerator. 3,669,040, Cl. 110-8.00a

Clifton, Edward A.; and Carrandi, Artemio P., to Dayco Corporation. Coating roller and method of manufacture. 3,668,752, Cl. 29-124.000

Clouse, Jerry A.: *See—*
Little, Joseph P.; and Clouse, Jerry A.,3,669,576.

Coast Metals, Inc.: *See—*
Cape, Arthur T., 3,669,653.

Coats Company, Inc., The: *See—*
Sorenson, Billy L.; and Scott, Ray A., 3,669,175.

Coder, William D., Jr.: *See—*
Stein, Alex H.; and Coder, William D., Jr.,3,670,049.

Coelho, Norman C.; and Thompson, Brian, to Beckman Instruments, Inc. Gas and liquid inlet system for chromatography. 3,668,935, Cl. 73-422.0gc

Coffy, Rene Louis: *See—*
Bourquardez, Gaston; and Coffy, Rene Louis,3,669,566.

Cogar, George R.: *See—*
Breslin, Mary Anne; Cogar, George R.; Lee, Charles A.; Neddenriep, Donald O.; Romeo, Albert J.; Sevilla, Ernesto G.; and Sekse, Torkjell,3,670,144.

Cohen, Edward A.: *See—*
United States of America,National Aeronautics and Space Administration, Administrator, 3,670,241.

Cohen, Edward M.; Grabowski, Edward J. J.; and Aczel, Rezso, to Merck & Co., Inc. Germine-diacetate in the treatment of myasthenia gravis. 3,670,083, Cl. 424-256.000

Cohen, Joseph H. Device for filtering tobacco smoke. 3,669,128, Cl. 131-261.00b

Cole, Raymond A., to Riegel Paper Corporation. Reclosable composite package. 3,669,345, Cl. 229-51.0ts

Cole, Willie E. Portable collapsible work table. 3,669,031, Cl. 108-50.000

Coleman, Patricia A. Flat doll. 3,668,805, Cl. 46-151.000

Coleman, William R.; and Duffey, Thomas E., to Pet Chemicals, Inc. Control of hookworm larvae employing a mixture of certain phosphate esters. 3,670,078, Cl. 424-212.000

Coles, Roy D.; and Richardson, Edwin A., to Shell Oil Company. Heat-guided hydroxide plugging. 3,669,188, Cl. 166-270.000

Colin, Roger, to Societe Anonyme dite: Aquitaine-Organico. Filter changing device. 3,669,166, Cl. 146-174.000

Collins Radio Company: *See—*
McAllister, Lewis L.; and Popek, Wencil D., 3,668,750.

Colon-Morales, Miguel Angel. Uterine displacement device. 3,669,118, Cl. 128-361.000

Columbia Controls Research Corporation: *See—*
Vaccaro, Angelo, 3,669,543.

Columbia Gas System Service Corporation: *See—*
Teague, Walter Dorwin, Jr.; Montalbano, Anthony Philip; Oakes, Andrew A.; Osborne, Keith; and Susey, Peter E., 3,668,784.

Columbia Ribbon and Carbon Manufacturing Co.: *See—*
Newman, Douglas A.; and Schlotzhauer, Allan T., 3,669,713.

Combs, Eugene E.: *See—*
Doede, Clinton M.; and Combs, Eugene E.,3,669,719.

Combustion Control Devices: *See—*
Misarek, Joseph; and Jaxheimer, William W., 3,668,839.

Combustion Engineering, Inc.: *See—*
Klumb, Ralph H., 3,669,834.

Communications & Systems, Inc.: *See—*
Grobert, Paul H., 3,670,155.

Compagnie Generale de Radiologie: *See—*
Lajus, Pierre, 3,670,163.

Compagnie Generale d'Electricite:*See—*
Goumy, Daniel, 3,670,093.

Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie: *See—*
Massoubre, Jean-Marie, 3,669,932.

Computing Devices of Canada Limited: *See—*
Struzina, Richard J., 3,669,382.

Concord Control, Inc.: *See—*
Grossimon, Herbert P.; McDonough, James O.; and Roberge, James K., 3,670,180.

Cone Mills Corporation: *See—*
Thompson, Lloyd W., 3,668,816.

Conley, Kurt H. Classifying apparatus with adjustable fines outlet. 3,669,265, Cl. 209-144.000

Conlon, Charles E.: *See—*
Gilvar, Martin; Conlon, Charles E.; and Lleger, Alfred R.,3,669,377.

Conn, Charles E., Jr.; and Neumann, Robert P., to North American Rockwell Corporation. Roll diffusion bonding method. 3,668,769, Cl. 29-421.000

Connerney, William R., to Raytheon Company. Waveguide hybrid junction wherein a wall of the E-arm is contiguous with a wall of the H-arm. 3,670,268, Cl. 333-11.000

Conroy, Robert E.; and Hauger, John H. Protective head gear. 3,668,704, Cl. 2-3.00r

Constantin Rauch: *See—*
Wagenseil, Ludwig, 3,669,569.

Contacts, Incoprorated: *See—*
Meisterling, John W., 3,669,334.

Continental Can Company, Inc.: *See—*
Mascia, Carmen T., 3,669,258.

Continental Carbon Company: *See—*
Latham, Burton F., Jr.; and Crull, William B., 3,669,628.

Continental Gummi-Werke Aktiengesellschaft: *See—*
Bernitz, Bernhard, 3,669,484.

Continental Ore Corporation: *See—*
Theisen, Roger Pierre, 3,669,178.

Continental Pet Innovations, Inc.: *See—*
Levensohn, David, 3,669,573.

Control Laser-Orlando, Inc.: *See—*
McMahan, William H., 3,668,777.
McMahan, William H., 3,670,256.
McMahan, William H., 3,670,257.

Conway, Maurice A.; Perkins, Carl C., Jr.; and Bellem, Norman A., to Butler Manufacturing Company. Starting platform for a roof seaming machine. 3,669,051, Cl. 113-54.000

Conze, Peter: *See—*
Rein, Hans-Martin; and Conze, Peter,3,669,760.

Cook, Harvey A., to TRW Inc. Carburetion system. 3,669,084, Cl. 123-139.

Coolbaugh, Richard W.; and Engels, Floyd W., to A-T-O Inc. Method of making illuminated panel. 3,670,067, Cl. 264-154.000

Cooling Developments Ltd.: *See—*
Murphy, Edmund, 3,669,421.

Coon, James A. Beveling attachment for belt sanders. 3,668,809, Cl. 51-135.00r

Cooper, Alan: *See—*
Grewcock, Sidney B.; Cooper, Alan; Amos, Arthur; and Sylvester, Paul,3,668,899.

Cooper, Hugh; Whitehouse, Dale S.; and Womble, George E., to Kewanee Machinery & Conveyor Co. Gang bolt locking arrangement. 3,669,193, Cl. 172-570.000

Copeland, George G., to Copeland Systems, Inc. Two-stage lime mud calciner. 3,669,430, Cl. 263-21.00a

Copeland, John H., to P.T. & T. Industries, Inc. Water cooling tower. 3,669,425, Cl. 261-79.00a

Copeland Systems, Inc.: *See—*
Copeland, George G., 3,669,430.

Copin, Robert; Sinn, Robert; and Bouilly, Charles, to Societe Chimique des Charbonnages. Production of complex nitrophosphate fertilisers. 3,669,641, Cl. 71-35.000

Copolymer Rubber & Chemical Corporation: *See—*
Bishop, William A., 3,669,722.

Corbett, Robert Lee, Jr. Centrifugal fan. 3,669,563, Cl. 415-211.000

Corlite Corporation: *See—*
Fredericks, Carl K., 3,669,820.

Corn, Prentice R.: *See—*
Gebhardt Wallace A.; and Corn, Prentice R.,3,670,119.

Corn, Prentice R.; and Gebhardt, Wallace A., to Switches, Inc. Horn actuating means. 3,670,120, Cl. 200-61.550

Cornelius Company, The: *See—*
Estrem, Malcolm J., 3,670,128.

Cornelius, Edward B.; and Koester, David W., to Air Products and Chemicals, Inc. Particles featuring gamma alumina. 3,669,904, Cl. 252-465.000

Cornell, Lew Wallace, to Minnesota Mining and Manufacturing Company. Flexible deformable self-supporting glass frit sealing tape. 3,669,787, Cl. 161-167.000

Cornell, Richard & Associates: *See—*
Cornell, Richard R.; and Koehler, William F., 3,669,338.

Cornell, Richard R.; and Koehler, William F., to Cornell, Richard & Associates. Packing container or the like. 3,669,338, Cl. 229-23.0bt

Corning Glass Works: *See—*
Dalton, Robert H.; and Riebling, Eugene F., 3,669,693.

Cornwell, Charles E., to Bailey, Jennings, Jr., mesne. Method of mixing and placing concrete. 3,669,417, Cl. 259-147.000

Cornwell, Charles E.; and Backus, James H., to Bailey, Jennings, Jr., mesne. Method of spraying concrete. 3,669,418, Cl. 259-147.000

Corporation of the City of Coventry: *See—*
Hughes, Edward Victor Lawson, 3,669,517.

Corsette, Douglas F., to Diamond International Corporation. Cartridge valve dispenser with pressure regulating valve. 3,669,316, Cl. 222-143.000

Cosden Oil & Chemical Company: *See—*
Wiley, Donald Field, 3,669,714.

Cote, Alfred A., to Philco-Ford Corporation. Tuner drive apparatus. 3,668,924, Cl. 74-10.700

Cottis, Steve G.; Nowak, Bernard E.; and Economy, James, to Carborundum Company, The. Polyester coated wire. 3,669,738, Cl. 117-232.000

Cotton, William Limited: *See—*
Marriott, Eric Walter, 3,668,903.

Coucoulas, Alexander, to Western Electric Company, Incorporated. Bonding with a compliant medium. 3,669,333, Cl. 228-3.000

Coulter Electronics, Inc.: *See—*
Capellaro, David ., 3,669,542.
Hogg, Walter R.; and Figueroa, David R., 3,670,150.

Courtaulds Limited: *See—*
Betts, Max William; and Robinson, Frank, 3,668,896.
Betts, Max William; and Robinson, Frank, 3,668,898.
Betts, Max William; and Robinson, Frank, 3,668,901.

Cowdrey, Roy M., to Singer Company, The. Self propelled pinking device. 3,668,780, Cl. 30-178.
Cowen, Samuel H., to Chemed Corporation. Film-tissue paper adhesive laminates. 3,669,822, Cl. 161-130.000
Cox, James P., to Inglis, John, Frozen Foods Company. Dual belt machine for trimming projections from globular articles. 3,669,164, Cl. 146-81.
Cox, Ronald H.; and Strack, Hans A., to Texas Instruments, Incorporated. Ohmic contacts for gallium arsenide semiconductors. 3,669,655, Cl. 74-173.00r
Coyle, Vincent E.: *See—*
Schindel, Arnold; and Coyle, Vincent E.,3,669,231.
CPC International Inc.: *See—*
Hull, Glenn Arden, 3,669,955.
Craig, Robert C.: *See—*
Richardson, Harry L.; and Craig, Robert C.,3,668,836.
Crane, Herbert R. Band saw with sawdust ejection means. 3,669,163, Cl. 143-157.
Cremer, Erika; and Kraus, Thaddaus, to Balzers Patent- und Beteiligungs-Aktiengesellschaft. Thin layer chromatographic method. 3,669,881, Cl. 210-31.
Cretti, Piero: *See—*
Cavalli, Fernando; and Cretti, Piero,3,669,588.
Croce, Louis J.; Bajars, Laimonis; and Gabliks, Maigonis, to Petro-Tex Chemical Corporation. Modified oxidative dehydrogenation catalysts. 3,670,042, Cl. 260-680.00e
Croce, Roberto: *See—*
Ackermann, Jacob; Croce, Roberto; and Reguzzoni, Riccardo,3,670,016.
Crosby, Donald P., to Sperry Rand Corporation. Digital fine-coarse servomechanism for a single element printer control system. 3,670,228, Cl. 318-594.000
Crown Zellerbach Corporation: *See—*
Schilling, Paul, 3,669,339.
Crull, William B.: *See—*
Latham, Burton F., Jr.; and Crull, William B.,3,669,628.
Cryer, Edward, to Lucas, Joseph, (Industries) Limited. Electrical switches. 3,670,116, Cl. 200-633.000
Csanad, George A. Vibrating apparatus for treatment of female disorders. 3,669,100, Cl. 128-32.
CTS Corporation: *See—*
English, Jack A., 3,670,285.
Cuffaro, Antonino; Castronovo, Francesco; Bruno, Achille; and Rancati, Gianluigi, to Medil, S.p.A. Method for manufacturing artificial marble. 3,670,060, Cl. 264-77.000
Cullen, Roy H.; Aker, Jimmie R.; and Burke, William E., to Youngstown Sheet and Tube Company. Drilling apparatus. 3,669,199, Cl. 175-106.000
Cullom, John T. Process for autogenous smelting of copper ore concentrates and charge product therefor. 3,669,646, Cl. 75-74.000
Culp, Gordon L.: *See—*
Slechta, Alfred F.; Culp, Gordon L.; and Dunnahoe, Richard G.,3,669,742.
Cumer, Joseph F.: *See—*
Besson, Jean R.; Cumer, Joseph F.; and Hoarau, Roland J.,3,669,549.
Cummings, Lowell O., to Pacific Vegetable Oil Corporation. Method and apparatus for continuous production of oil-in-water emulsions. 3,669,900, Cl. 252-359.00c
Cunningham, Robert G.: *See—*
Whitmore, Thomas C., Jr.; and Cunningham, Robert G.,3,670,203.
Curlator Corporation: *See—*
Wood, Dennis E., 3,669,823.
Curran, Frank J., Co.: *See—*
Curran, Frank J., 3,668,717.
Curran, Frank J., to Curran, Frank J., Co. Hanger for deodorant and/or cleaner bars. 3,668,717, Cl. 4-231.000
Curtis, Gerald J. Golf ball retriever. 3,669,427, Cl. 294-19.000
Curtiss-Wright Corporation: *See—*
Avena, Salvatore; and Richardson, Harry L., 3,668,940.
Cuschera, Casper. Drain connection. 3,668,718, Cl. 4-288.000
Cushman, Robert Holbrook, to Western Electric Company, Incorporated. Bonding press having improved support base structure. 3,669,806, Cl. 156-580.000
Cutter, Leonard S.: *See—*
Lacey, Richard F.; Cutter, Leonard S.; and Turner Wilson S.,3,670,171.
Cyba, Henryk A., to Universal Oil Products Company. Stabilizing plastic with borated dihydroxydiphenyl sulfide. 3,669,926, Cl. 260-45.950
Cyriax, Wilhelm. Mold-closing means for molding machines. 3,669,593, Cl. 425-186.
Czehovsky, Gunther: *See—*
Feder, Ernst; Deselaers, Kurt; and Czehovsky, Gunther,3,669,847.
Dahm, Johann: *See—*
Borck, Joachim; Dahm, Johann; Koppe, Volker; Kramer, Josef; Shorre, Gustav; Hovy, J. W. Hermann; and Schorscher, Ernst,3,669,956.
Borck, Joachim; Dahm, Johann; Koppe, Volker; Kramer, Josef; Schorre, Gustav; Hovy, Jan Willem; and Schorscher, Ernst,3,669,972.
Borck, Joachim; Dahm, Johann; Koppe, Volker; Kramer, Josef; Schoree, Gustav; Hovy, Jan Willem Herman; and Schorscher, Ernst,3,669,973.
Dahn, Carl James; and Van Den Heuvel, Anthony P., to IIT Research Institute. Thin film device. 3,669,022, Cl. 102-28.
Daimler-Benz Aktiengesellschaft: *See—*
Hase, Helmut, 3,669,221.
D'Alelio, Gaetano F.,10% to Monacelli, Walter J. Substituted amino-s-triazines. 3,669,963, Cl. 260-249.600
D'Alelio, Gaetano F.,10% to Monacelli, Walter J. Substituted amino-s-triazines. 3,669,964, Cl. 260-249.800
Dalton, Robert H.; and Riebling, Eugene F., to Corning Glass Works. Germania-silica glasses and method of coating. 3,669,693, Cl. 117-201.000
Dame, John S., to Motorola, Inc. Transponder monitoring system. 3,670,303, Cl. 340-146.10c
Dana Corporation: *See—*
Wilson, Denney R., 3,669,476.
Danfoss A/S: *See—*
Jensen, Arne, 3,670,224.
Petersen, Jorgen Hartvig; and Sturlason, Leif Viggo, 3,669,419.
Waldorff, Jorgen Frederik, 3,668,947.
Danielli, Ezio: *See—*
Caldo, Cornelio; Danielli, Ezio; Incollingo, Italo; and Protospataro, Francesco,3,669,829.
Daniluke, Manuel. Butter spreader and support for ears of cooked corn. 3,669,063, Cl. 118-13.000
Date, Raghunath V.; and Furness, George R., to Celanese Corporation. Removal of volatiles from polyamides. 3,669,938, Cl. 260-78.00r
Dauber, Philip S.: *See—*
Amdahl, Gene M.; Arnold, Richard F.; Dauber, Philip S.; Freiman, Charles V.; Robelen, Russell J.; Schorr, Herbert; and Wierzbicki, John R.,3,670,309.
Arnold, Richard F.; Dauber, Philip S.; Freiman, Charles V.; Robelen, Russell J.; and Wierzbicki, John R.,3,670,307.
Daume, Eduard; and Breitenmoser, Jurg, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Stabilized polyvinyl nitrate and process. 3,669,924, Cl. 260-45.9
Davey, Ronald E.; Tomlinson, Charles N.; and White, Alan, to Treplex Safety Glass Company Limited. Laminated structures. 3,669,826, Cl. 161-196.000
Davidson, Brian Y. Device for heating frankfurters and the like. 3,669,002, Cl. 99-327.000
Davies, Robin John; and Capewell, William Kenneth, to Elliott Brothers (London) Limited. Signal generating apparatus. 3,669,024, Cl. 102-70.20r
Davis, Robert A., to Xerox Corporation. Adjustable label knife. 3,668,963, Cl. 83-346.000
Davis, Ronald I., to Sun Oil Company. Fractionation of C_{18} bicyclic aromatic hydrocarbons by tetrahalophthalic anhydride complex formation. 3,670,039, Cl. 260-674.00n
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Dayco Corporation: *See—*
Clifton, Edward A.; and Carrandi, Artemio P., 3,668,752.
DCA Food Industries, Inc.: *See—*
Kaufman, Harold B., Jr.; Schiffmann, Robert F.; and Stein, Ernest W., 3,670,132.
Klug, Sigmund L.; Finkel, Gilbert; and Sherain, Monroe B., 3,669,674.
Thompson, Hal J., 3,669,688.
De Angelis, Sabino J. Camera device. 3,669,533, Cl. 352-95.000
Deans, David Robert, to Imperial Chemical Industries Limited. Sample injection in gas chromatography. 3,668,834, Cl. 55-67.000
Deans, Howard; and Sager, Thomas B., to Ultrasonic Systems, Inc., mesne. Method for remotely sealing plastics using ultrasonic energy. 3,669,780, Cl. 156-73.000
Deardorff, Donald L.: *See—*
Fath, Joseph; and Deardorff, Donald L.,3,669,995.
De Boeck, Paul; Marteel, Bernard; and Schrijvers, Jozef, to Belgonucleaire, S.A. Nuclear fuel. 3,669,833, Cl. 176-68.000
De Carpentier, Pieter: *See—*
Van Westrenen, William J.; De Carpentier, Pieter; and Nieuwenhuis, Willem H. M.,3,669,942.
Decker, Charles L.; and Tutle, Edward G., to General Electric Company. Unitary insulation and termination member. 3,670,277, Cl. 336-192.000
Declaye, Joseph: *See—*
Brichard, Edgard; and Declaye, Joseph,3,669,640.
DeCoene, Frans J., to Clayson, N.V. Grain tank unloading device for combines. 3,669,291, Cl. 214-519.000
De Coene, Frans J.; and Strubbe, Gilbert J., to Clayson N.V. Anti-dust device for a combine. 3,669,124, Cl. 130-27.00r
De Core, Fred; Peake, Thaddeus A.; and Marshall, Ted R., to United States of America, Navy. Method of rebuilding worn gear teeth by explosive swaging. 3,668,768, Cl. 29-401.000
De Corso, Serafino M.; and Jersey, Chester A., to Westinghouse Electric Corporation. Fuel spray ignition atomizer nozzle. 3,668,869, Cl. 60-39.74r
Deep Oil Technology, Inc.: *See—*
Walker, Raymond W., 3,668,949.
Deering Milliken Research Corporation: *See—*
Gordon, David E., 3,669,779.
Stark, Daniel C., 3,669,818.
De Fazio, Dominick J. Closure fastener. 3,669,482, Cl. 292-80.000

Deist, Robert P., to American Home Products Corporation. Process for the production of semi-synthetic penicillin intermediate. 3,669,978, Cl. 260u301.000

de Jong, Bernulphus A., to Friedr, Joh., Schneider. Device for displaying rugs or like merchandise stored in form of rolls. 3,669,372, Cl. 242-55.000

Del-Giudice, Frank Paul: *See—*
Koleske, Joseph Victor; Roberts, Rene Marie-Joseph; and Del-Giudice, Frank Paul,3,670,045.

De La Mare, Harold E.; and Shaw, Alfred W., to Shell Oil Company. Block copolymers having reduced solvent sensitivity. 3,670,054, Cl. 260-880.00b

Del Monte Corporation: *See—*
Ross, Edward E., 3,669,240.

de Long, Charles F.; and Shepherd, Thomas H., to National Patent Development Corporation. Produce coating. 3,669,691, Cl. 99-168.000

De Luxe General Incorporated: *See—*
Bragg, Herbert E., 3,670,157.

De Marco, John Gregory: *See—*
Weyker, Robert George; Baitinger, William Frederick, Jr.; and De Marco, John Gregory,3,669,609.

De Meux, Patrick De Laage, to Lignes Telegraphiques et Telephoniques. Phase-coherent frequency-shift modulation system for oscillation multivibrator. 3,670,266, Cl. 332-14.000

Demosay, Daneil; Pillon, Daniel; and Ducret, Jacques, to Pechiney-Progil. Certain 6-methyl-3-pyridyl phosphates, corresponding thio phosphates and derivatives thereof. 3,669,975, Cl. 260-294.80k

De Nicolay, Giuliano; and Venturini, Piero, to Societa Italiana Telecommunicazioni Siemens S.p.A. Phase-lock-stabilized system for generating carrier frequencies usable in multiplex communication. 3,670,255, Cl. 331-25.000

Depenheuer, Otto, to ITT Industries, Inc. Spot-type brake wear indicator. 3,670,300, Cl. 340-52.00a

Derc, Roman; Eitel, Ronald John Frank; and Bragg, Cecil, to International Computers Limited. Document feeding apparatus. 3,669,446, Cl. 271-29.000

D'Ercole, Augustine D., to General Foods Corporation. Process of preparing frozen pudding composition. 3,669,687, Cl. 99-139.000

Derleth, Robert J., to Motor Wheel Corporation. Vehicle wheel construction. 3,669,501, Cl. 301-37.

Derrickson, Charles, Jr.; and Rodgers, Robert A., to International Harvester Company. Fold-down seat mechanism for vehicles. 3,669,488, Cl. 296-66.000

Desai, Ramesh R.; and Dohn, George D., to Balsa Development Corporation. Structural light-weight panel for cryogenic and elevated temperature applications. 3,669,815, Cl. 161-37.000

Desbarats, William Edouard. Air-propelled vehicle and method for driving and steering said vehicle. 3,669,212, Cl. 180-120.000

Deselaers, Kurt: *See—*
Feder, Ernst; Deselaers, Kurt; and Czehovsky, Gunther,3,669,847.

Desgurse, Paul J. A.; and Rogaar, Harm P., to Shell Oil Company. Two-step bulk polymerization of pivalolactone. 3,669,940, Cl. 260-78.30r

Designward Industries, Inc.: *See—*
Mehl, Donald N., 3,668,798.

Desmond, Richard J.; Fronxzek, Edward J.; and McCarthy, John J., to General Electric Company. Machine and process for semiconductor device assembly. 3,669,478, Cl. 228-5.000

Desso, Thomas Dean; and Henschen, Homer Ernst, to AMP Incorporated. Method of manufacturing electrical terminals. 3,669,054, Cl. 113-119.000

DeStefano, Richard T.: *See—*
Wayson, Andrew J.; and DeStefano, Richard T.,3,669,219.

Deurloo, Johannis M., to Draka Kabel N. V. Connector enclosure. 3,669,470, Cl. 285-45.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Koberstein, Edgar; and Lakatos, Eduard, 3,669,906.

Devenish, Graham F.: *See—*
Folkes, Hugh L.; and Devenish, Graham F.,3,669,238.

Dever, Lewis A., to Cincinnati Milacron Inc. Method and apparatus for machining an elongated workpiece. 3,668,971, Cl. 90-11.00r

Devitt, John L.; and McClelland, Donald H., to Gates Rubber Company, The. Separators for secondary alkaline batteries having a zinc-containing electrode. 3,669,746, Cl. 136-30.000

Dew, Robert C., to Stratton & Terstegge Co., Inc. Tobacco curing apparatus. 3,669,429, Cl. 263-19.00d

Dewas, Raymond. Weaving machines with continuous weft feed. 3,669,155, Cl. 139-123.

Dexter Corporation: *See—*
Stein, Alex H.; and Coder, William D., Jr., 3,670,049.

Diamond International Corporation: *See—*
Corsette, Douglas F., 3,669,316.
Horvath, William, 3,669,295.
Struble, Glenn E., 3,669,337.

Diamond Julius, to Rorer, William H., Inc.N-(Substituted-polyhydrocycloalkano [b] -uinolines carboxamides. 3,669,971, Cl. 260-286.00r

Dictaphone Corporation: *See—*
Kendall, Trevor William, 3,668,759.

Diersbock, Gunther Rudalph, to Timex Corporation. High voltage watch power supply. 3,668,860, Cl. 58-23.0ba

Diesel Kiki Kabushiki Kaisha: *See—*
Ohtani, Yoshio, 3,670,319.

Dietrich, Lee A.; Dikeman, John C.; and Johnson, Kenneth R., said Dietrich and said Kikeman assors. to the United States of America, Atomic Energy Commission. Removal of materials from ion exchange resins. 3,669,631, Cl. 23-342.000

Digital Equipment Corporation: *See—*
Aumann, Frederick C., III; and Butler, Gerald V., Jr., 3,670,311.

Dikeman, John C.: *See—*
Dietrich, Lee A.; Dikeman, John C.; and Johnson, Kenneth R.,3,669,631.

Dimitry, Edward A., to APM Corporation. Hermetically sealing boot with actuator for thumb wheel type switches. 3,668,938, Cl. 74-18.100

Dines, David R. Humidifier. 3,670,141, Cl. 219-271.000

Dionys Hofmann Maschinenfabrik GmbH: *See—*
Ende, Kurt Hans Dietrich, 3,669,500.

Dismukes, John Pickett, to RCA Corporation. Low temperature silicon etch. 3,669,774, Cl. 156-17.000

Distillers Company Limited, The: *See—*
Ball, William John; and Gasson, Edward James, 3,670,017.

Divecha, Amarnath P.; Lare, Paul J.; Ordway, Fred, Jr.; Hermann, Robert A.; Van Blaricon, Orville B.; and Hahn, Henry, to American Standard, Inc. Process for producing whisker-reinforced metal matrix composites by liquid-phase consolidation. 3,668,748, Cl. 29-419.000

Dixon, Corbin; and Larew, John J., to General Electric Company. Method and structure for supporting electric components in a matrix. 3,670,205, Cl. 317-101.0ce

Dixon-Bate, B., Limited: *See—*
Roberts, Richard Walter, 3,668,743.

Doane, John L.: *See—*
Wurmbrand, Mihai; and Doane, John L.,3,669,056.

Dobritz, Gunter, to Dragerwerk Aktiengesellschaft. Method for mixing pressure gases particularly for respirators and medical devices. 3,669,134, Cl. 137-7.000

Doctor, Walter L., Jr.: *See—*
Ege, Hans Raymond; and Doctor, Walter L., Jr.,3,670,295.

Dodson, Keith D.: *See—*
Annis, Darrell D.; Dodson, Keith D.; and Sykes, Paul M.,3,669,931.

Doede, Clinton M.; and Combs, Eugene E., to Quantum, Inc. Composite articles having metallic boating with high temperature lubricity. 3,669,719, Cl. 117-93.1pf

Dogadko, Peter: *See—*
Beuk, Ljubomir; Dogadko, Peter; and Sansbury; Larry,3,669,086.

Doherty, Harry G.: *See—*
Plank, Charles J.; Waldo, Pharez, G.; and Doherty, Harry G.,3,669,875.

Dohn, George D.: *See—*
Desai, Ramesh R.; and Dohn, George D.,3,669,815.

Doi, Kazuo; Nakajima, Jun; Takahashi, Hisamitsu; and Tomokawa, Hideo, to Matsushita Electric Works, Ltd. Inorganic coating composition. 3,669,699, Cl. 106-74.

Domenighetti, Domenico. Vibrations generator with multiple shafts in series, especially for vibrating tamping means. 3,668,983, Cl. 94-50.

Dominion Engineering Works, Limited: *See—*
Rodwin, Stephen Anthony, 3,668,785.
Williams, Stanley C., 3,669,830.

Domke, Klaus, to Fr. Hesser Maschinenfabrik A.G. Heat seal tool. 3,669,810, Cl. 156-583.000

Doner, Abraham J., deceased0 (by Doner, Cyril; executor), to Miles Laboratories, Inc. Sunscreen formulation containing triethanolamine neutralized 2-hydroxy-4-methoxy-benzophenone-5-sulfonic acid. 3,670,074, Cl. 424-60.000

Doner, Cyril: *See—*
Doner, Abraham J.,3,670,074.

Donnelly, Charles A.; and Sanders, James F., to Minnesota Mining and Manufacturing Company. Fixing process. 3,669,707, Cl. 117-21.000

Dorfman, Edwin; Emerson, William E.; Bean, Claude T., Jr.; and Carr, Russell L. K., to Hooker Chemical Corporation. Polytriazapentadiene polymers. 3,669,941, Cl. 260-78.4

Dorken & Mankel KG: *See—*
Tillmann, Horst, 3,668,737.

Dornier System GmbH: *See—*
Romhild, Peter; and Herpfer, Eugen, 3,669,371.

Douglas, Larry D., to Pakulak, Pete, and Pakulak, Lucile A. Vehicle anti-theft device. 3,670,301, Cl. 340-65.000

Dow Chemical Company, The: *See—*
Bauman, William C., 3,668,873.
Chiu, Thomas T.; Hock, Kenneth R.; and Nagle, Floyd B., 3,669,718.
Hargash, Paul, 3,669,248.
Harper, Billy Gene; Bashaw, Robert Niles; and Atkins, Bobby Leroy, 3,669,103.
Najvar, Daniel J., 3,669,911.
Olson, Robert S.; and Surls, Joseph P., Jr., 3,669,649.
Raley, Charles F., Jr., 3,669,918.
Segel, Edward; and Scheffel, Kenneth G., 3,669,000.
Stafford, Owen L.; and Tarzwell, Robert K., 3,669,914.
Tomalia, Donald A.; and Thill, Bruce P., 3,670,046.
Vivian, Thomas A., 3,670,036.

Dowd, Albert A., to International Business Machines Corporation. Forms feeding tractor and jam detector therefor. 3,669,327, Cl. 226-11.

Dowd, Joseph F. Shower facility. 3,668,710, Cl. 4-145.000

Downs, Ned E., to Hercules Incorporated. Apparatus for removing oil from water. 3,669,275, Cl. 210-242.000
Dowty Technical Developments Limited: *See—*
McLeod, Donald Patterson, 3,669,568.
Doyle, James R., to Towmotor Corporation. Container handling vehicle. 3,669,290, Cl. 214-392.000
Draca, Cedo. Method for the production of abrasive brushing elements. 3,669,850, Cl. 204-16.000
Dragerwerk Aktiengesellschaft: *See—*
Dobritz, Gunter, 3,669,134.
Draka Kabel N. V.: *See—*
Deurloo, Johannis M., 3,669,470.
Drake, Cyril Francis; and Amos, Robert Walter James, to International Standard Electric Corporation. Delay line glass. 3,669,697, Cl. 106-53.000
Dravo Corporation: *See—*
Allison, Robert J.; Hatfield, Paul E.; and Frumerman, Robert, 3,669,623.
Drehman, Lewis E.; and Walker, Darrell W., to Phillips Petroleum Company. Catalytic dehydrogenation process. 3,670,044, Cl. 260-683.3
Dresser Industries, Inc.: *See—*
Berriman, Lester P., 3,669,879.
Drew, Dennis H.; and Hecht, Paul F. Safety container. 3,669,296, Cl. 215-9.000
Driver, Michael C.: *See—*
Page, Derrick J.; and Driver, Michael C.,3,669,661.
Droke, Joseph W.; Hataway, James E.; and Russin, Nicholas C., to Eastman Kodak Company. Copolyester melt adhesive. 3,669,921, Cl. 260-40.00r
Dubner, Ben B. Automatic retracting hypodermic syringe. 3,669,111, Cl. 128-218.00p
Du Bois, John L.; and Grein, Louis F. Rotatable pointer driven and indexed by the rotor of an electronically controlled water having permanent magnet poles. 3,669,453, Cl. 273-141.00a
Ducret, Jacques: *See—*
Demosay, Daneil; Pillon, Daniel; and Ducret, Jacques,3,669,975.
Duffey, Thomas E.: *See—*
Coleman, William R.; and Duffey, Thomas E.,3,670,078.
Duffy, Arthur R.: *See—*
Smith, Ernset L.; Duffy, Arthur R.; and Lyman, Eugene S.,3,669,816.
Dugan, John J., to Esso Research and Engineering Company. Catalyst system. 3,670,037, Cl. 260-656.00r
Duggan, Lois J., trustees of the estate of Magnuson, Roy M.: *See—*
Babb, Raymond E., 3,669,263.
Duguay, Michel Albert, to Bell Telephone Laboratories, Incorporated. Direct display of light images with picosecond resolution. 3,669,541, Cl. 356-5.000
Dunlap, Dennis L.; and Bryan, Darrel L., to Pacific Car and Foundry Company. Vehicle elastomeric suspension system. 3,669,467, Cl. 280-124.000
Dunlop Holdings Limited: *See—*
Folkes, Hugh L.; and Devenish, Graham F., 3,669,238.
Goy, Ronald S.; and Moring, Peter L. E., 3,668,857.
Mills, Iain C., 3,669,174.
Young, Maurice A., 3,669,173.
Dunn, Geoffrey Bernard; and York, Leonard Ernest, to Sira Institute, formerly known as British Scientific Instrument Research Association. Device for, and method of, feeding limp workpieces to an apparatus. 3,669,048, Cl. 112-121.260
Dunnahoe, Richard G.; Bondahl, Gary B.; and Roth, Paul W., to Neptune Microfloc, Incorporated. Method and apparatus for air-cleaning settling tube modules. 3,669,741, Cl. 134-22.00r
Dunnahoe, Richard G.: *See—*
Slechta, Alfred F.; Culp, Gordon L.; and Dunnahoe, Richard G.,3,669,742.
Dupasquier, Joseph H. Discharging nozzle assembly for producing equalized distribution of pressurized fluid in an elongated drying chamber. 3,669,831, Cl. 162-290.000
Dupea, Fred W. Vacuum cleaner head for cleaning and combing shag carpeting. 3,668,735, Cl. 15-397.000
du Pont de Nemours, E. I., and Company: *See—*
Iler, Ralph K.; and Palmer, Alan B., 3,669,695.
Knowles, Richard N., 3,670,019.
Lavinder, Taylor Franklin, 3,668,948.
Magat, Eugene Edward; and Tanner, David, 3,670,048.
Tinder, Edgar Karl, 3,669,726.
Duriron Company, Inc., The: *See—*
Bowen, John C., 3,668,978.
Durkoppwerke GmbH: *See—*
Nicolay, Karl, 3,669,043.
Duro-Test Corporation: *See—*
Thorington, Luke; and Parascandola, Louis J., 3,670,193.
Dynamit Nobel AG: *See—*
Umbach, Hans; and Jena, Hans, 3,669,580.
Dynamit Nobel Aktiengesellschaft: *See—*
Feder, Ernst; Deselaers, Kurt; and Czehovsky, Gunther, 3,669,847.
Eagle-Picher Industries, Inc.: *See—*
McCullough, William N.; and Spracklen, Edwin E., deceased Spracklen, Dorothy H.; legal representative, 3,669,748.
Earp, Charles William, to International Standard Electric Corporation. Radio navigation receiving equipment. 3,670,338, Cl. 343-108.00m
Earp, Charles William; and Overbury, Francis Giles, to International Standard Electric Corporation. Radio navigation beacon utilizing a commutator which supplies radio frequency in succession to several aerials. 3,670,337, Cl. 343-108.000
Eastech Limited: *See—*
Sircom, Richard Cumming, 3,670,206.
Eastman Kodak Company: *See—*
Bruton, John M., 3,669,375.
Droke, Joseph W.; Hataway, James E.; and Russin, Nicholas C., 3,669,921.
Haist, Grant M.; and Humphlett, Wilbert J., 3,669,670.
Harvey, Donald M., 3,668,992.
Harvey, James E., 3,669,553.
Merrill, Stewart H., 3,669,859.
Peiffer, Harold E.; and Kohl, Ralph A., 3,668,996.
Schieven, Stanley R.; and Sampson, Gerald A., 3,669,448.
Tone, Frederick F., 3,668,980.
Whitmore, Thomas C., Jr.; and Cunningham, Robert G., 3,670,203.
Wright, John F.; and Rubin, Bruce J., 3,669,885.
Eaton Allen Corporation: *See—*
Barough, Victor; Glenn, Robert; and Rose, Louis, 3,669,019.
Eaton, Daniel A.: *See—*
Knowles, Terence J.; and Eaton, Daniel A.,3,669,860.
Eaton, John L., Jr.; Richard, Kenneth L.; and Schwartz, Walter M., Jr., to Proctor-Silex Incorporated. Toaster-oven. 3,669,004, Cl. 99-331.000
Eaton Yale & Towne, Inc.: *See—*
Fathauer, George H., 3,670,318.
Ebert, Ekkehard,: *See—*
Badami, Angelo V.; Ebert, Ekkehard,; Kemlage, Bernard M.; Kroell, Karl E.; and Pogge, H. Bernhard,3,669,769.
Ecke, Gunter: *See—*
Renz, Eberhard; Voss, Siegfried; and Ecke, Gunter,3,668,725.
Economics Laboratory, Inc.: *See—*
Hatcher, Herbert J., 3,669,840.
Economy, James: *See—*
Cottis, Steve G.; Nowak, Bernard E.; and Economy, James,3,669,738.
Eden, Jamal S., to Goodrich, B. F., Company, The. Catalyst for preparation of unsaturated aldehydes and acids. 3,669,909, Cl. 252-435.000
Edwards, Clarence K.; and Edwards, Lawrence D. Forming precise reinforced recesses in thermoplastic foams. 3,670,064, Cl. 264-130.
Edwards, David G.: *See—*
Starr, Arthur T.; and Edwards, David G.,3,670,269.
Edwards, Lawrence D.: *See—*
Edwards, Clarence K.; and Edwards, Lawrence D.,3,670,064.
Edwards, Oliver J., Jr., to Raytheon Company. Protective eyeshield. 3,669,523, Cl. 350-57.000
Ege, Hans Raymond; and Doctor, Walter L., Jr., to Underwriters Safety Device Co. Terminal block and terminal connector. 3,670,295, Cl. 339-198.00s
Eger, Helmut, to Siemens Aktiengesellschaft. Method of separating semiconductor chips from a semiconductor substrate. 3,668,774, Cl. 29-578.
Eilingsfeld, Heinz: *See—*
Wuerstlin, Franz; Feichtmayr, Franz; and Eilingsfeld, Heinz,3,669,888.
Eimers, Erich, to Farbenfabriken Bayer Aktiengesellschaft. N-aryl-substituted dialkanolamino- polyurethanes. 3,669,991, Cl. 260-34.200
Einfeldt, George J.: *See—*
Wooten, Robert D.; Neal, Warren D.; and Einfeldt, George J.,3,669,245.
Eitel, Ronald John Frank: *See—*
Derc, Roman; Eitel, Ronald John Frank; and Bragg, Cecil,3,669,446.
Ekstrom, Ake, to Allmanna Svenska Elektriska Aktiebolaget. Converter station having parallel-connected static converters. 3,670,236, Cl. 321-27.
Electric Reduction Company of Canada, Ltd.: *See—*
Meyers, Norman W., 3,669,619.
Electronic Associates, Inc.: *See—*
McMurray, James A., 3,670,154.
Elliott Brothers (London) Limited: *See—*
Davies, Robin John; and Capewell, William Kenneth, 3,669,024.
Parkman, William Terence; and MacCormac, James Kenneth Maxwell, 3,670,149.
Elliott, Roger M., to British Steel Piling Company Limited, The. Fluid operated drop hammer with valved piston. 3,669,198, Cl. 173-127.000
Ellis, Belvin B.: *See—*
Millsop, William Q.; Ellis, Belvin B.; and Burkhardt, Charles E.,3,670,279.
Ellis, Jacob B. Rotatable hopper livestock feed dispenser. 3,669,076, Cl. 119-52.00b
Ellison, John E., to Skinner Precision Industries, Inc. Explosion-proof valve operator. 3,670,274, Cl. 335-260.000
Elmgren, Jarl A.; and Rodite, Robert R. R., to International Business Machines Corporation. Sputtering apparatus having a concave source cathode. 3,669,871, Cl. 204-298.000
Elmore, Robert E., to Avco Corporation. Charged particle analyzer. 3,670,162, Cl. 250-41.9me

Elpern, Bill; and Shroff, James R., to USV Pharmaceutical Corporation. N,N1tdisubstituted benzamidines. 3,669,974, Cl. 260-293.790
Elstein, Benjamin; and Fein, Roman. Production of copper compounds and copper metal powder. 3,669,650, Cl. 75-101.
Emelianenko, July Georgievich: *See—*
Paton, Boris Evgenievich; Latash, Jury Vadimovich; Medovar, Boris Izrailevich; Emelianenko, July Georgievich; and Kljuev, Mikhail Markovich,3,670,089.
Emerson, William E.: *See—*
Dorfman, Edwin; Emerson, William E.; Bean, Claude T., Jr.; and Carr, Russell L. K.,3,669,941.
Emich, Georg Konrad, to Maschinenfabrik Goebel GmbH. Winding shaft. 3,669,369, Cl. 242-56.900
Emr, Antonin; and Pribil, Rudolf, to Ceskoslovenska akademie ved. Method of isolating and purifying sulphone- phthalein derivatives of iminodiacetic acid and its salts. 3,669,988, Cl. 260-327.00s
En Dean, Howard J.: *See—*
Beach, Horace J.; En Dean, Howard J.; Frawley, Frank E.; and Yates, Dick,3,669,700.
Ende, Kurt Hans Dietrich, to Dionys Hofmann Maschinenfabrik GmbH. Balance weight for vehicle wheels. 3,669,500, Cl. 301-5.00b
Endo, Takaya: *See—*
Iwama, Masakuni; Inoue, Isaburo; Hanzawa, Teruo; Sakamoti, Kenro; and Endo, Takaya,3,669,671.
Enercon International Limited: *See—*
Pennachetti, John T.; and Boux, Joseph F., 3,669,703.
Engels, Floyd W.: *See—*
Coolbaugh, Richard W.; and Engels, Floyd W.,3,670,067.
Engelsmann, Dieter; and Schroder, Rolf, to Agfa-Gevaert Aktiengesellschaft. Exposure controlling structure for photographic apparatus. 3,668,988, Cl. 95-11.00r
English, Geoffrey; and Mountfield, Brian Arthur, to Imperial Chemical Industries Limited. Manufacture of foams. 3,669,910, Cl. 260-2.50n
English, Jack A., to CTS Corporation. Variable resistance control with end collector. 3,670,285, Cl. 338-175.000
Engvoll, Sverre, to Arenco Aktiebolag. Device for folding onto, and joining with, one another two side edge portions of a heat sealing foil. 3,669,805, Cl. 156-567.000
Engvoll, Sverre: *See—*
Jarvis, Richard L.; Kully, Walter; Calusen, Victor H.; Zweig, Arnold; and Engvoll, Sverre,3,669,803.
Ensslin, Frieder H., to Bendix Corporation, The. Substrate support module. 3,669,812, Cl. 165-26.000
Environmental Control Products, Inc.: *See—*
Clements, Richard F., 3,669,040.
Eppensteiner, Frederick Walter, to M & T Chemicals Inc. Novel nickel etch process. 3,669,776, Cl. 156-18.000
Epstein, Martin Eden; Rosenthal, Arnold Joseph; and Santangelo, Joseph Germano, to Celanese Corporation of America. Elastomeric fibers. 3,669,934, Cl. 260-77.5sp
Eranosian, John. Vehicle attitude stabilization and control system. 3,669,409, Cl. 254-86.000
Erba, Carlo, S.p.A.: *See—*
Ambrogi, Vittorio; and Logemann, Willy, 3,669,966.
Eriksson, Karl Gunnar; and Mangen, Arnold. Process for producing dosage units of a type resembling tablets. 3,670,065, Cl. 264-131.000
Erlenbach, Walter, to Illinois Tool Works, Inc. Battery connector assembly. 3,670,297, Cl. 339-232.000
Erlichman, Irving, to Polaroid Corporation. Folding camera. 3,668,991, Cl. 95-39.
Eros Camponovo: *See—*
Cavalli, Fernando; and Cretti, Piero, 3,669,588.
ESB Incorporated: *See—*
Purcell, Thomas H., Jr., 3,669,320.
Esselte AB: *See—*
Klingspor, Richard; and Alebrant, John, 3,669,015.
Esso Research and Engineering Company: *See—*
Dugan, John J., 3,670,037.
Romanelli, Michael G., 3,670,029.
Romanelli, Michael G., 3,670,032.
Sarsten, Jan A.; Zacks, Kenneth I.; and Myers, Michael C., 3,668,882.
Estrem, Malcolm J., to Cornelius Company, The. Adjustable timer having rotation cam and wide range variable dwell. 3,670,128, Cl. 200-153.0lb
Ethyl Corporation: *See—*
Berry, Currie B., Jr., 3,669,654.
Sanders, Robert N.; and Johnston, James D., 3,669,266.
Shepherd Lawrence H., Jr., 3,669,990.
Shepherd, Lawrence H., Jr., 3,670,001.
Shepherd, Lawrence H., Jr., 3,670,038.
Evans, Ernest C., to Kimberly-Clark Corporation. Surface protection material. 3,669,252, Cl. 206-46.0fn
Evans, William Robert, to AMP Incorporated. Torsion contact zero-insertion force connector. 3,670,288, Cl. 339-74.00r
Everett, Wilhelm Sydow, to American Air Filter Company, Inc. Hydrodynamic surge absorbing apparatus. 3,669,150, Cl. 138-26.000
Ewald, John D.: *See—*
Alley, Raymond L.; Hartman, George F., Jr.; and Ewald, John D.,3,668,999.
Explosive Technology: *See—*
Van Kreuningen, Rudolf, 3,669,388.
Fabrique Nationale d'Armes de Guerre, Societe Anonyme:*See—*
Bruelemans, Karel Bernard Marie, 3,668,895.
Factory Mutual Research Corporation: *See—*
Livingston, William L., 3,669,191.
Fadler, Kurt: *See—*
Kraus, Helmut; and Fadler, Kurt,3,669,233.
Fahey, Thomas M.; and Mentzell, John C., to Westinghouse Electric Corporation. High-ratio drive mechanism. 3,668,946, Cl. 74-640.000
Faigenbaum, Mark A.; Lasky, Daniel J.; and Weisel, Harold C., to International Business Machines Corporation. Process for making resist stencils from photographic stripping films and for using same. 3,669,665, Cl. 96-36.000
Fairaizl, Max L.; and Schneerman, John F., to Health-Mor, Inc. Vacuum cleaner shag rug nozzle construction. 3,668,734, Cl. 15-328.000
Fairchild Industries, Inc.: *See—*
Glantz, Earl; and McComas, Jean W., 3,669,385.
Falk, Edward J., to Wagner Electric Corporation. Control valve and system. 3,669,505, Cl. 303-6.00c
Falk, John D.: *See—*
Stewart, Aubrey P., Jr.; and Falk, John D.,3,669,675.
Faltin, Hans G. Pre-printed inserts and feed means therefor. 3,669,814, Cl. 161-37.000
Fancher, Llewellyn W.; and Gray, Reed A., to Stauffer Chemical Company. Aryloxy and arylmercapto-N-methoxyethy lacetamidomonothio and dithi phosphates and phosphonates and their utility as herbicides. 3,669,642, Cl. 71-87.000
Fanelli, Louis H.: *See—*
Sinizer, David I.; Toy, Albert; Atteridge, David G.; and Fanelli, Louis H.,3,669,364.
Fanta, George F.,: *See—*
Jones, Duane A.; Fanta, George F.,; and Burr, Robert C.,3,669,915.
Farago, Laszlo D.: *See—*
Sanders, James F.; Baumgartner, Ronald R.; and Farago, Laszlo D.,3,669,706.
Farbenfabriken Bayer Aktiengesellschaft: *See—*
Bien, Hans-Samuel; and Klauke, Erich, 3,669,951.
Eimers, Erich, 3,669,991.
Krimm, Heinrich; Botta, Artur; and Schneill, Hermann, 3,670,024.
Lorenz, Gunter; Gallus, Manfred; Giessler, Wolfgang; and Nischk, Gunther, 3,669,928.
Schulze, Manfred; and Schabacher, Werner, 3,669,621.
Senge, Ferdinand; Weirauch, Kurt; and Bottenbruch, Ludwig, 3,670,051.
Ugi, Ivar, 3,670,005.
Zecher, Wilfred; and Merten, Rudolf, 3,669,937.
Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Fernholz, Hans; Schmidt, Hans-Joachim; and Wunder, Friedrich, 3,670,014.
Farrell, Robert G., to Sperry Rand Corporation. Power transmission. 3,669,147, Cl. 137-625.600
Fasco Industries, Inc.: *See—*
Holstrom, Allan, 3,669,145.
Fath, Joseph; and Deardorff, Donald L., to Teknor Apex Company. Poly(organotin) mercaptide polymers and resins stabilized therewith. 3,669,995, Cl. 260-399.000
Fathauer, George H., to Eaton Yale & Towne, Inc. Load cell output circuit. 3,670,318, Cl. 340-199.000
Fauser, Donald L.: *See—*
Adams, Dolor N.; and Fauser, Donald L.,3,669,657.
Faust, John P., to Olin Corporation. Preparation of high test calcium hypochlorite. 3,669,894, Cl. 252-187.000
Faust, Werner. Switching arrangement for disconnecting high voltage direct current lines. 3,670,176, Cl. 307-136.000
Feder, Ernst; Deselaers, Kurt; and Czehovsky, Gunther, to Dynamit Nobel Aktiengesellschaft. Process for separating steam-volatile organic solvents from industrial process waste waters. 3,669,847, Cl. 203-14.000
Federal Pacific Electric Company: *See—*
Fortier, Jean R.; and Wrobel, Donald P., 3,670,284.
Federal Products Corporation: *See—*
Fougere, Guy L.; Rothery, John L.; and Miller, Raymond H., 3,670,243.
Federal Screw Works: *See—*
Brown, Robert S., II, 3,668,954.
Federman, Alfred P. Process of bonding molten metal to preform without interfacial alloy formation. 3,669,179, Cl. 164-66.
Feeny, Richard William: *See—*
Lutz, Albert William; and Feeny, Richard William,3,669,970.
Feichtmayr, Franz: *See—*
Wuerstlin, Franz; Feichtmayr, Franz; and Eilingsfeld, Heinz,3,669,888.
Fein, Roman: *See—*
Elstein, Benjamin; and Fein, Roman,3,669,650.
Feldkamper, Richard, to Windmoller & Holscher. Apparatus for manufacturing a multi-ply tube section consisting of at least two webs of plastics material sheeting and intended for use in the manufacturing of bags. 3,669,802, Cl. 156-387.
Feldstein, Nathan, to RCA Corporation. Method of making abrasion-resistant metal-coated glass photomasks. 3,669,770, Cl. 156-3.000

Fellgett, Peter Berners; and Whitfield, George Robert, to International Harvester Company of Great Britain Limited, mesne. Vehicle guidance systems. 3,669,207, Cl. 180-98.000
Felsher, Hal-Curtis: *See—*
Bradshaw, Carleton R.; and Felsher, Hal-Curtis,3,669,765.
Bradshaw,Carleton R.; and Felsher, Hal-Curtis,3,669,764.
Ferag, Fehr & Reist AG: *See—*
Reist, Walter, 3,669,008.
Ferguson, Jean. Teaching aid for retarded children. 3,668,789, Cl. 35-9.00e
Fermi, Enzo; and Francesco, San Donaio Milanese, to Snam Progetti S.p.A. Apparatus for producing composite fibers. 3,669,591, Cl. 425-131.
Fernholz, Hans; Schmidt, Hans-Joachim; and Wunder, Friedrich, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the manufacture of allyl esters of carboxylic acids. 3,670,014, Cl. 260-497.00a
Fernsteuergerate Kurt Oelsch KG: *See—*
Lieber, Hans-Wilhelm; and Kramer, Rolf, 3,669,868.
Ferris, James P., to Salk Institute for Biological Studies, The. Aminomalononitrile and method of preparation thereof. 3,670,007, Cl. 260-465.5
Ferro Corporation: *See—*
Whitehouse, Robert George, 3,669,426.
Fetish, William H., Jr., to Uniroyal, Inc. Flexible connecting device. 3,669,471, Cl. 285-49.000
Fibreglass Limited: *See—*
Lomas, Eric Ellis, 3,668,964.
Fichtel & Sachs AG: *See—*
Kraus, Helmut; and Fadler, Kurt, 3,669,233.
Fielding, Francis L., to International Telephone and Telegraph Corporation. Non-store cursor writing on a storage tube. 3,670,200, Cl. 315-12.000
Figge, Erwin E.; Lancor, Joseph H., Jr.; and Lodge, Edward H., to Bell & Howell Company. Projector control apparatus. 3,669,532, Cl. 352-78.00c
Figueroa, David R.: *See—*
Hogg, Walter R.; and Figueroa, David R.,3,670,150.
Fike, Robert R. Polarographic electrode apparatus and method. 3,669,864, Cl. 204-195.
Filatov, Sergei Sergeevich; and Konorev, Mikhail Maximovich. Apparatus for thermocatalytic neutralizing of exhaust gases of an internal combustion engine. 3,669,630, Cl. 23-288.00f
Fink, Frank J., to Imperial Manufacturing and Engineering Company. Automated system including indexing mechanism. 3,668,772, Cl. 29-563.000
Finkel, Gilbert: *See—*
Klug, Sigmund L.; Finkel, Gilbert; and Sherain, Monroe B.,3,669,674.
Fiorino, Benjamin C.: *See—*
Andresen, Rolf; Fiorino, Benjamin C.; and Niccore, Fred W.,3,670,304.
Fischbacher, Hermann, to Fischer, Georg, AG. Conveyor roll arrangement. 3,669,243, Cl. 198-127.00r
Fischer, Charles G.: *See—*
Benson, Ernest J.; and Fischer, Charles G.,3,668,821.
Fischer, Georg, AG: *See—*
Fischbacher, Hermann, 3,669,243.
Fischer, Paul W., to Union Oil Company of California. Method for inhibiting the deposition of wax from wax-containing oil. 3,669,189, Cl. 166-279.
Fisher, Dennis Glendon, to RCA Corporation. Method for activating a semiconductor electron emitter. 3,669,735, Cl. 117-224.000
Fisher, John M. Escape slide positioning tube. 3,669,217, Cl. 182-48.000
Fisons, Limited: *See—*
Altounyan, Roger Edward Collingwood; and Howell, Harry, 3,669,113.
Fitz, Edward. Lung exercising apparatus and method. 3,669,097, Cl. 128-2.080
Flavin, Michael A.: *See—*
Bukosky, Allen A.; Flavin, Michael A.; Hill, Donald G.; Huizinga, Donald D.; and Ritchey, James F.,3,670,111.
Fleming, John W., Jr.; and McMullen, James Michael, to Industrial Nucleonics Corporation, mesne. Web sampling method and apparatus. 3,668,922, Cl. 73-1.
Fleming, William T., to Kidde, Walter & Company, Inc. Hydraulic system accumulator arrangement. 3,669,151, Cl. 138-31.000
Flisi, Umberto: *See—*
Cameli, Nazzareno; Longi, Paolo; Valvassori, Alberto; and Flisi, Umberto,3,670,055.
Flogel, Ernst, to Franck'sche Eisenwerke AG. Water softener and a device combined therewith. 3,669,270, Cl. 210-123.
Flowers, Leonard B.; and Okuniewski, Vincent F. Lamp and socket decorative locking device. 3,670,160, Cl. 240-102.00a
FMC Corporation: *See—*
Lutz, Charles William, 3,669,682.
Focht, John Richard, to Precision Valve Corporation. Aerosol mechanical break-up nozzle insert. 3,669,359, Cl. 239-491.000
Folden, Virgil A., Jr.; and Miller, Johny, Jr., to United States of America, Navy. Undersea pressure sensitive actuator. 3,669,311, Cl. 222-3.000
Foley, Charles F.; and McCarthy, Charles D. Table game top insert for changing contour of table game surface. 3,669,452, Cl. 273-101.000
Folkes, Hugh L.; and Devenish, Graham F., to Dunlop Holdings Limited. Conveyors. 3,669,238, Cl. 198-16.000
Forbes, Malcolm R.: *See—*
Panzer, Hans P.; Yare, Robert S.; and Forbes, Malcolm R.,3,669,679.
Forbes, Norman Arthur, to American Standard, Inc. Proximity switching equipment. 3,670,167, Cl. 250-221.000
Forbro Design Corporation: *See—*
Gately, Joseph R., 3,670,246.
Forrer, Homer W., to Mead Corporation, The. Article carrier having improved partition structure. 3,669,306, Cl. 220-113.000
Forrest Paschal Machinery Company: *See—*
Brown, John J., Jr., 3,669,283.
Forsyth, Bruce Adam: *See—*
Pryor, David Ernest; and Forsyth, Bruce Adam,3,670,085.
Pryor, David Ernest; and Forsyth, Bruce Adam,3,670,086.
Fort, Edward F., to International Harvester Company. Carburetor with fuel shut-off means having a fuel- air ratio adjustment mechanism. 3,669,083, Cl. 123-97.00b
Fortier, Jean R.; and Wrobel, Donald P., to Federal Pacific Electric Company. Range limiter for a thermostat. 3,670,284, Cl. 337-360.000
Foster, James Bernard Turner. Pocket clip for ammunition. 3,669,249, Cl. 206-3.000
Foster, Karl; and Seidel, Joseph, to Westinghouse Electric Corporation. Bonded core structure comprising a plurality of glass coated electrical steel sheets. 3,670,278, Cl. 336-213.000
Foster Wheeler John Brown Boilers Limited: *See—*
Roberts, Daniel Frank Thomas, 3,670,140.
Fougere, Guy L.; Rothery, John L.; and Miller, Raymond H., to Federal Products Corporation, mesne. Physical displacement measuring system utilizing impedance changing the frequency of an oscillatory circuit. 3,670,243, Cl. 324-57.00r
Fowler, Donald W., to Textiles, Inc. Overedging apparatus. 3,669,046, Cl. 112-121.150
Fowler, Raymond L., to International Business Machines Corporation. Illumination system. 3,669,538, Cl. 355-67.000
Fowler, Robert R. Magnetic disk memory spindle assembly. 3,670,315, Cl. 340-174.10c
Fox, David J.; King, Jane E.; and Nardelli, Orazio J., to Honeywell Information Systems, Inc. Process for data communication between data processing. 3,670,306, Cl. 340-172.500
Fr. Hesser Maschinenfabrik A.G.: *See—*
Domke, Klaus, 3,669,810.
Francesco, San Donaio Milanese: *See—*
Fermi, Enzo; and Francesco, San Donaio Milanese,3,669,591.
Franck'sche Eisenwerke AG:*See—*
Flogel, Ernst, 3,669,270.
Frank, Peter M.; and Watts, Frank M., to Beautiline Showcase Systems. Channel member having a removal side wall. 3,668,830, Cl. 52-400.000
Franke, Gladys Marie: *See—*
Candy, James Charles; Franke, Gladys Marie; and Mounts, Frank William,3,670,096.
Franke, Rudiger: *See—*
Tax, Hans; and Franke, Rudiger,3,669,206.
Frantz, Franklin D.; Acello, Salvatore J.; and Geller, Harold I., to Sprague Electric Company. Encapsulated electrical components with protective pre-coat containing collapsible microspheres. 3,670,091, Cl. 174-52.0pe
Franz-Josef: *See—*
Benteler, Helmut; Franz-Josef; and Hefendehl, Heinz,3,668,918.
Franzreb, John K. Apparatus for heating and cooling a building. 3,669,184, Cl. 165-50.000
Frawley, Frank E.: *See—*
Beach, Horace J.; En Dean, Howard J.; Frawley, Frank E.; and Yates, Dick,3,669,700.
Frederick, Arthur I.: *See—*
Pandjiris, Anthony K.; Frederick, Arthur I.; and Weinfurt, Edward J.,3,670,139.
Fredericks, Carl K., to Corlite Corporation. Cellular structure. 3,669,820, Cl. 161-68.000
Frederiksen, Thomas M., to Motorola, Inc. Current limiting transistor. 3,670,219, Cl. 317-235.
Freeman, Horace L.: *See—*
Woodall, Hubert C., Jr.; Freeman, Horace L.; and Goodman, Noah C.,3,669,157.
Freeman, Peter Frank Hilary; Shephard, Margaret Claire; and Snell, Brian Kenneth, to Imperial Chemical Industries, Limited. Fungicidal and insecticidal methods and compositions employing pyrimidine derivatives. 3,670,077, Cl. 424-200.000
Freerks, Conrad T.; and Luecke, Fred R., Jr., to Minnesota Mining and Manufacturing Company. Surface grinding device. 3,668,814, Cl. 51-144.000
Freiman, Charles V.: *See—*
Amdahl, Gene M.; Arnold, Richard F.; Dauber, Philip S.; Freiman, Charles V.; Robelen, Russell J.; Schorr, Herbert; and Wierzbicki, John R.,3,670,309.
Arnold, Richard F.; Dauber, Philip S.; Freiman, Charles V.; Robelen, Russell J.; and Wierzbicki, John R.,3,670,307.
Freudenberg, Carl: *See—*
Bischoff, Dieter, 3,669,819.
Frey, Robert J.: *See—*
Vilcins, Ilmar J.; and Frey, Robert J.,3,669,799.

Freyermuth, Harlan B., to GAF Corporation. Novel process for the production of 2- benzothiazolyl-phenol and derivatives thereof employing phosphorus trichloride as a catalyst. 3,669,979, Cl. 260-304.

Fried, John H., to Pfizer Inc. Stimulatory effect of organic acids in citric acid fermentation. 3,669,839, Cl. 195-37.000

Friedman Mendel, to United States of America, Agriculture. Flame-resistant wool. 3,669,610, Cl. 8-128.

Friedr, Joh., Schneider: *See—*
de Jong, Bernulphus A., 3,669,372.

Friedrich, Heinz G., to Petro-Tex Chemical Corporation. Multichamber fluidized bed catalytic reactor. 3,669,877, Cl. 208-164.000

Fritkin, George A., to Tel-Tech Corporation. FM system for receiving binary information. 3,670,250, Cl. 329-104.000

Fromknecht, Charles T.: *See—*
Batson, William A.; and Fromknecht, Charles T.,3,668,842.

Fronxzek, Edward J.: *See—*
Desmond, Richard J.; Fronxzek, Edward J.; and McCarthy, John J.,3,669,478.

Frost, James D., Jr.: *See—*
United States of America,National Aeronautics and Space Administration, Administrator, 3,669,110.

Frost-A-Glass Corporation: *See—*
Roslonski, Donald J., 3,668,888.

Frotscher, Herbert: *See—*
Rall, Ulrich; Frotscher, Herbert; and Petzold, Manfred,3,669,702.

Frumerman, Robert: *See—*
Allison, Robert J.; Hatfield, Paul E.; and Frumerman, Robert,3,669,623.

Fuentes, Gabriel, Jr. Pile section for forming a pilot hole. 3,668,877, Cl. 61-53.000

Fugate, James E. Guard rail demountable socket. 3,669,480, Cl. 287-20.950

Fuji Photo Film Co., Ltd.: *See—*
Kasugai, Tsuneo; and Minagawa, Nobuhiko, 3,669,709.
Kimura, Shiro; Kobayashi, Teruo; and Ishige, Sadao, 3,669,710.
Kimura, Shiro; Kobayashi, Teruo; Ishige, Sadao; and Kiritani, Masataka, 3,669,711.
Kimura, Shiro; Kobayashi, Teruo; Ishige, Sadao; and Kiritani, Masataka, 3,669,712.
Shiba, Keis uke; Ohi, Reiichi; and Shishido, Tadao, 3,669,672.
Utsugi, Mikio; and Ohta, Takahiro, 3,669,789.
Yonezawa, Teruhiko; Kobayashi, Kesanao; and Kobayashi, Teruo, 3,669,658.

Fuji Shashin Kouki Kabushiki Kaisha: *See—*
Idei, Gijun; and Numata, Saburo, 3,670,184.

Fujii, Yoshifusa, to Minolta Camera Kabushiki Kaisha. Automatic diaphragm aperture adjusting device for flash photography in camera with interchangeable lens. 3,668,994, Cl. 95-64.00a

Fujii, Yoshikazu: *See—*
Nakaguchi, Kohei; Nishikida, Tomozumi; Kawasumi, Shohachi; Maemoto, Kenichi; Sano, Takezo; Fujii, Yoshikazu; Harada, Koichi; and Ueda, Keijyu,3,669,945.

Fujimoto, Keimei: *See—*
Itaya, Nobushige; Kamoshita, Katsuzo; Mizutani, Toshio; Kitamura, Shigeyoshi; Nakai, Shinji; Kameda, Nobuyuki; Fujimoto, Keimei; and Okuno, Yositosi,3,669,989.
Tsuchiya, Hiroshi; Kunio, Nishinomiya-Shi; Kimura, Akio; Kawano, Suminori; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Okuno, Yositosi; Tanaka, Katsutoshi; Ooishi, Tadashi; and Takeda, Hisami,3,670,057.

Fujimura, Kyoichi: *See—*
Ando, Satoshi; Tanaka, Yusaku; Kojima, Minoru; and Fujimura, Kyoichi,3,669,917.

Fujio, Tatsuro: *See—*
Tanaka, Masao; Oka, Tetuo; Fujio, Tatsuro; and Mochizuki, Kazuo,3,669,842.

Fujiwara, Shigeru; Nagae, Kenji; and Okuhashi, Tomomi, to Teijin Limited. Textile material having a durable antistatic property and the fibers to be used for its purpose. 3,669,736, Cl. 117-226.

Fukatsu, Yukio: *See—*
Nakayama, Junn; and Fukatsu, Yukio,3,670,061.

Fukawa, Mitsunosuke; Oishi, Haruo; Saruya, Kichitaro; Nagai, Akira; and Nagai, Yoshitaro. Formation of coating on copper containing materials. 3,669,766, Cl. 148-6.240

Fukazawa, Yoshiaki; Iwata, Yoshitaka; and Sakurai, Shigeharu, to Mitsubishi Kasei Kogyo Kabushiki Kaisha. Method of manufacturing composite bodies of metals and polyolefins. 3,669,797, Cl. 156-316.000

Fuller, David L., to Scripto, Inc. Wide angle photographic objective having nonspherical surfaces. 3,669,527, Cl. 350-189.000

Fuller, John L.: *See—*
Hayes, Robert R.; Fuller, John L.; and Stockham, James R.,3,669,449.

Fullerton, James, to International Telephone and Telegraph Corporation. Cream filler apparatus. 3,669,005, Cl. 99-460.100

Funkhouser, James B., to Mead Corporation, the. Article carrier. 3,669,342, Cl. 229-40.000

Furbeck, Warren E.: *See—*
Lee, Charles A.; and Furbeck, Warren E.,3,669,781.

Furman, Ben R. Quick draw holster. 3,669,325, Cl. 224-2.00c

Furness, George R.: *See—*
Date, Raghunath V.; and Furness, George R.,3,669,938.

Furukawa, Yoji: *See—*
Suzuki, Norio; and Furukawa, Yoji,3,670,158.

Fusco, Vito A.; Ogden, Charles T.; and Illman, Walter F., to Burlington Industries, Inc. Automatic splicing apparatus. 3,668,852, Cl. 57-22.000

G-W Plastic Engineers, Inc.: *See—*
Miller, Manuel S., 3,669,592.

Gabel, Floyd S. Sausage slicing apparatus. 3,669,167, Cl. 146-98.000

Gabliks, Maigonis: *See—*
Croce, Louis J.; Bajars, Laimonis; and Gabliks, Maigonis,3,670,042.

Gaeddert, Melvin V.; and Wiggers, Verlin, to Hesston Corporation. Stover saver for combines. 3,669,123, Cl. 130-27.00r

GAF Corporation: *See—*
Freyermuth, Harlan B., 3,669,979.

Gaheen, Alfred F., Jr., to Westinghouse Electric Corporation. Attitude control system. 3,670,334, Cl. 343-7.4

Gajdos, George. Service tool for gas mains. 3,669,139, Cl. 137-317.

Gallant, Bernie Edward. Dual occupancy cradle. 3,668,722, Cl. 5-327.

Gallus, Manfred: *See—*
Lorenz, Gunter; Gallus, Manfred; Giessler, Wolfgang; and Nischk, Gunther,3,669,928.

Gannoe, Thomas E.: *See—*
Johnson, Gordon L.; and Gannoe, Thomas E.,3,670,294.

Gantzler, Charles Y. Bricklayers tool holder. 3,669,396, Cl. 248-309.000

Garbisch, Walter E. Protective helmet with hood. 3,668,705, Cl. 2-10.000

Garcia, Banancio. Connecting device. 3,670,291, Cl. 339-92.00m

Gard, Inge, to Allmanna Svenska Elektriska Aktiebolaget. High voltage circuit braker of low liquid type. 3,670,127, Cl. 200-150.00b

Gardiner, Sidney David: *See—*
Bennett, Michael Camm; and Gardiner, Sidney David,3,669,620.

Gardner-Denver Company: *See—*
Hanson, Laurence B.; and Arthur, Wallace W., 3,669,197.

Garfinkle, Marvin, to Helicorporation. Coaxial helicopter rotor system and transmission therefor. 3,669,564, Cl. 416-121.000

Garretson, Keith H.; and Garretson, Owen L. Carburetor fuel-air proportioning mechanism. 3,669,636, Cl. 48-180.00p

Garretson, Owen L.: *See—*
Garretson, Keith H.; and Garretson, Owen L.,3,669,636.

Garrett, Dwight A.; and Muehlbauer, Heinz A., to Garrett Enumclaw Co. Mobile logging vehicle and method of skidding logs. 3,669,280, Cl. 212-7.000

Garrett Enumclaw Co.: *See—*
Garrett, Dwight A.; and Muehlbauer, Heinz A., 3,669,280.

Garver, William Joseph, to AMP Incorporated. Shielded wire connectors. 3,670,293, Cl. 339-177.0mp

Garvey, Bruce J., to Kewanee Oil Company. Method of electrodeposition onto stainless steel. 3,669,851, Cl. 204-25.000

Gasson, Edward James: *See—*
Ball, William John; and Gasson, Edward James,3,670,017.

Gately, Joseph R., to Forbro Design Corporation. Under-voltage monitoring device having time delay means for regulated power supplies. 3,670,246, Cl. 324-133.

Gates, Albert George Ronald, to Gestetner Limited. Sheet sensing mechanism. 3,669,017, Cl. 101-235.000

Gates, Albert George Ronald, to Gestetner Limited. Liquid applying member. 3,669,071, Cl. 118-264.000

Gates Rubber Company, The: *See—*
Devitt, John L.; and McClelland, Donald H., 3,669,746.

Gauchet, Yves M., to Societe Anonyme Poclain. Public works machines. 3,669,286, Cl. 214-138.00r

Gebhardt Wallace A.; and Corn, Prentice R., to Switches Incorporated. Switch with improved actuator means. 3,670,119, Cl. 200-52.00r

Gebhardt, Wallace A.: *See—*
Corn, Prentice R.; and Gebhardt, Wallace A.,3,670,120.

Gebruder Junghans G.m.b.H.: *See—*
Scholz, Gunter, 3,668,862.

Geck, Gunter; and Langhammer, Hans Jurgen, to Klockner-Werke AG. Apparatus for melting particulate metal. 3,669,434, Cl. 266-33.00s

Gedde, Ove Christopher. Process for the production of colored protective coatings on articles of aluminum or aluminum alloys. 3,669,856, Cl. 204-58.000

GEHAP Gesellschaft fuer Handel und Patenverwertung m.b.H & Co. KG: *See—*
Schmitt, Karl, 3,670,265.

Gehrke, Howard G., to Lawrence Brothers, Inc. Shelf and pole bracket. 3,669,395, Cl. 248-235.000

Geigy Chemical Corporation: *See—*
Gubler, Kurt; Meyer, Urs; and Brechbuhler, Hans Ulrich, 3,669,976.

Geitz, Norman C. Matrix coating apparatus. 3,669,068, Cl. 118-64.000

Geller, Harold I.: *See—*
Frantz, Franklin D.; Acello, Salvatore J.; and Geller, Harold I.,3,670,091.

Gem Oil Tool Company: *See—*
Alexander, Granison T., Jr., 3,669,187.

General Binding Corporation: *See—*
Thomas, Wilbur E., 3,669,442.

General Electric Company: *See—*
Caltagirone, Saverio, 3,669,380.
Decker, Charles L.; and Tutle, Edward G., 3,670,277.
Desmond, Richard J.; Fronxzek, Edward J.; and McCarthy, John J., 3,669,478.
Dixon, Corbin; and Larew, John J., 3,670,205.

Graff, William A.; and Kohut, Jaroslaw, 3,669,698.
Huth, Gerald C., 3,669,731.
Kim, Sang-Chul, 3,669,607.
Konecny, Charles R., 3,669,758.
Nakata, Roy; and Oppel, John A., 3,670,222.
Perusek, Ronald J., 3,669,763.
Schmidt, Ferenc J., 3,669,849.
Turner, Prescott K., 3,668,779.
Winn, Oliver H., 3,670,333.
Wright, John H., 3,669,884.

General Foam Plastics Corporation: *See—*
Chase, Ascher, 3,668,715.

General Foods Corporation: *See—*
D'Ercole, Augustine D., 3,669,687.
Panzer, Hans P.; Yare, Robert S.; and Forbes, Malcolm R., 3,669,679.
Shoaf, Myron D.; Ketch, Frederick M.; and Wong, Thomas S., 3,669,681.

General Impact Extrusions (Manufacturing) Ltd.: *See—*
Rieder, Otto E., 3,668,757.

General Motors Corporation: *See—*
LaBoda, Mitchell A., 3,669,858.

General Signal Corporation: *See—*
Sibley, Henry C., 3,670,161.

Gentry, Charles B.; Scanlon, Robert M.; Rumery, Jerome; McDonald, Howard L.; and Keeler, Larry G., to Granco Equipment, Inc. Extrusion handling apparatus. 3,668,910, Cl. 72-24.000

George, Peter D.: *See—*
Wyatt, James B.; George, Peter D.; and Van Dyck, Kenneth,3,669,104.

Geoscience Limited: *See—*
Mouritzen, Gunnar, 3,669,026.

Gerbic, Charles C., to Grove Valve and Regulator Company. Expansible tube valve with low pressure bleed. 3,669,142, Cl. 137-489.

Gerkin, Harry H. Fruit picker. 3,668,848, Cl. 56-334.000

Gerlach, Le Roy E.; Johnson, Gordon P.; and Tandeski, David A., to Sperry Rand Corporation. Removable card-handling cartridge. 3,669,262, Cl. 209-80.500

Gestetner Limited: *See—*
Gates, Albert George Ronald, 3,669,017.
Gates, Albert George Ronald, 3,669,071.

Getzin, Allan R.: *See—*
Westlin, Karl L.; and Getzin, Allan R.,3,668,843.

Gibbins, Charles Lewis: *See—*
O'Hara, James; and Gibbins, Charles Lewis,3,668,716.

Giddings & Lewis, Inc.: *See—*
Achterberg, Raymond C., 3,668,773.

Giebelhausen, Charles W.: *See—*
Hyosaka, Alfred M.; Giebelhausen, Charles W.; and Kaufman, Arthur L.,3,669,535.

Giessler, Wolfgang: *See—*
Lorenz, Gunter; Gallus, Manfred; Giessler, Wolfgang; and Nischk, Gunther,3,669,928.

Gilbertson, Warren L.: *See—*
Spencer, John H.; Ramsey, Richard T.; and Gilbertson, Warren L.,3,669,021.

Gilby, Anthony C., to Wilks Scientific Corporation. Apparatus and method for analysis by attenuated total reflection. 3,669,545, Cl. 356-74.000

Gilgoff, Herman. Remote control automobile theft prevention mechanism. 3,669,211, Cl. 180-112.000

Gille, John P., to Martin Marietta Corporation. Capillary insulation. 3,668,880, Cl. 62-45.000

Gillemot, George W., to Plummer, Walter A. Method of protecting metal-clad cables from attack by stray currents. 3,669,777, Cl. 156-54.000

Gilles, Jack C., to Goodrich, B. F., Company, The. Process for the preparation of hydroxybenzyl esters of cyanuric acid. 3,669,961, Cl. 260-248.0ns

Gilvar, Martin; Conlon, Charles E.; and Lleger, Alfred R., to Morgan Construction Company. Coiling apparatus. 3,669,377, Cl. 242-82.

Ging, Dieter: *See—*
Preininger, Erich; and Ging, Dieter,3,669,896.

Girard, Rene Fernand Victor; and Le Guillerm, Jacques, to Societe Industrielle Honeywell Bull. Apparatus for obtaining wires for magnetic memories. 3,669,866, Cl. 204-207.

Giufrida, Anthony J.: *See—*
Kirkham, Thomas A.; Arnold, John W.; and Giufrida, Anthony J.,3,669,857.

Givaudan Corporation: *See—*
Lamparsky, Hans Dietmar; and Marbet, Roman, 3,670,026.

Glantz, Earl; and McComas, Jean W., to Fairchild Industries, Inc. Aircraft of improved and simplified construction. 3,669,385, Cl. 244-13.000

Glanzstoff AG: *See—*
Schulze, Kurt-Jurgen; and Jung, Joachim, 3,669,761.

Glaverbel: *See—*
Brichard, Edgard; and Declaye, Joseph, 3,669,640.

Glegg, Keith C. M.; Haberl, John F.; Baumans, Hans W.; and Piibe, Rein, to Canadian Marconi Company. Method of measuring aircraft parameters using doppler techniques and altitude holes. 3,670,329, Cl. 343-9.000

Glenn, Robert: *See—*
Barough, Victor; Glenn, Robert; and Rose, Louis,3,669,019.

Globe-Union, Inc.: *See—*
Buttke, Richard A.; Sabatino, Anthony; Orlando, Daniel; and Behrens, William H., 3,668,761.

Gloor, Urs; Ruegg, Rudolf; and Ulrich, Schwieter, to Hoffmann-La Roche Inc. Benzohydroquinones. 3,670,031, Cl. 260-613.00d

Gloridso, Ray: *See—*
Kartasuk, Ray; and Gloridso, Ray,3,669,440.

Glynn, Michael Harvey: *See—*
Cheffers, Stanley John; and Glynn, Michael Harvey,3,669,109.

Godo Shusei Kabushiki Kaisha: *See—*
Imai, Tomio; Shimamura, Mutsuo; Yoshitake, Juichi; and Ohiwa, Hitoshi, 3,669,845.

Goebel, Robert W., to Robbins & Myers, Inc. Electric motor and higher speed fan assembly. 3,670,190, Cl. 310-60.000

Goedecke, Hans: *See—*
Sauerwein, Kurt; and Goedecke, Hans,3,669,093.

Goetz, Richard W.; and Mador, Irving L., to National Distillers and Chemical Corporation. Catalyzed hydrolysis of nitriles to amides. 3,670,021, Cl. 260-561.00r

Goings, Harford E. Under dash hot and cold drink dispenser. 3,669,314, Cl. 222-13.00g

Goksel, Mehmet Adnan, to Michigan Technological University. Feeder for high pressure autoclave. 3,669,318, Cl. 222-307.000

Golda, Eugene; and Taudien, Alfred, to Polychrome Corporation. Lithographic plate developing composition and process of use thereof. 3,669,660, Cl. 96-33.000

Golden, David E., to Advanced Research Instrument Systems, Inc. Charged particle generating and utilizing. 3,670,172, Cl. 250-43.50r

Gooderum, Leoda J. Legless ironing board. 3,669,032, Cl. 108-97.000

Goodman, Noah C.: *See—*
Woodall, Hubert C., Jr.; Freeman, Horace L.; and Goodman, Noah C.,3,669,157.

Goodrich, B. F., Company, The: *See—*
Cameli, Nazzareno; Longi, Paolo; Valvassori, Alberto; and Flisi, Umberto, 3,670,055.
Eden, Jamal S., 3,669,909.
Gilles, Jack C., 3,669,961.
Krupp, Carroll P., 3,668,745.
Krupp, Carroll P., 3,669,585.
Smith, Peter D.; and Kletecka, George, 3,669,962.

Goodyear Aerospace Corporation: *See—*
Bell, James C., Jr., 3,669,368.

Gordon, David E., to Deering Milliken Research Corporation. Production of pile fabrics. 3,669,779, Cl. 156-72.000

Gordon, Gary B., to Hewlett-Packard Company. Logic clip. 3,670,245, Cl. 324-73.00r

Gore, Graves T., to Riegel Textile Corporation. Apparatus for fabricating sanitary napkins. 3,669,800, Cl. 156-383.000

Goto, Kazuhiro, to GSW Limited-GSW Limitee. Tub washing machine support structure. 3,669,389, Cl. 248-22.000

Gottlieb, David: *See—*
Shier, Wayne Thomas; Rinehart, Kenneth L., Jr.; and Gottlieb, David,3,669,838.

Gould, Francis E.: *See—*
Shepherd, Thomas H.; and Gould, Francis E.,3,670,073.

Goumy, Daniel, to L'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude and Compagnie Generale d'Electricite. Electric cryoconnection. 3,670,093, Cl. 174-15.00c

Gower, Roger L. Hook having slotted entry. 3,668,746, Cl. 24-230.500

Goy, Ronald S.; and Moring, Peter L. E., to Dunlop Holdings Limited. Method for the manufacture of cord. 3,668,857, Cl. 57-157.0ts

Grabowski, Edward J. J.: *See—*
Cohen, Edward M.; Grabowski, Edward J. J.; and Aczel, Rezso,3,670,083.

Grace, W. R., & Co.: *See—*
Bell, Sydney George Frederick, 3,668,817.
Warthen, John L.; and Cheavens, Thomas H., 3,669,624.

Graco Inc.: *See—*
Larson, James H., 3,669,516.

Graff, William A.; and Kohut, Jaroslaw, to General Electric Company. Seal glasses. 3,669,698, Cl. 106-54.000

Grafstein, Daniel: *See—*
Barnes, Robert L.; and Grafstein, Daniel,3,669,993.

Graham Transmissions, Inc.: *See—*
Alsch, Richard E., 3,668,892.

Granco Equipment, Inc.: *See—*
Gentry, Charles B.; Scanlon, Robert M.; Rumery, Jerome; McDonald, Howard L.; and Keeler, Larry G., 3,668,910.

Grankowski, Eugene E.; and Pappas, Lambros A., to Wyman-Gordon Company, mesne. Hydraulic control system for a metal forming press. 3,668,920, Cl. 72-455.000

Grant, John M.; and Stolzy, Albert D., to International Telephone and Telegraph Corporation. Coordinate detector. 3,669,550, Cl. 356-152.000

Gray, Reed A.: *See—*
Fancher, Llewellyn W.; and Gray, Reed A.,3,669,642.

Gray, Rowland H. Illuminated sign. 3,668,797, Cl. 40-130.

Grebene, Alan B.: *See—*
Kleitman, David; Russell, Lewis K.; and Grebene, Alan B.,3,669,666.

Grebner, William J.: *See—*
Updyke, Kenneth W.; and Grebner, William J.,3,670,092.

Greci, John J.: *See—*
Bascomb, Hollis H.; and Greci, John J.,3,669,790.
Green, Edgar E.; and Nuckols, Phillip H., to Abbott, Paul, Company, Inc. Folding implement carrier. 3,669,195, Cl. 172-311.000
Greenbaum, Michael A.: *See—*
Marantz, Laurence B.; and Greenbaum, Michael A.,3,669,878.
Marantz, Laurence B.; and Greenbaum, Michael A.,3,669,880.
Greenwood, John Christopher, to International Standard Electric Company. Electrostatic relays. 3,670,130, Cl. 200-152.
Greenwood, John Malcolm; and Stokes, David Howard, to Lever Brothers Company. Chemical compositions. 3,669,891, Cl. 252-90.000
Grein, Louis F.: *See—*
Du Bois, John L.; and Grein, Louis F.,3,669,453.
Greuter, Robert, to Aktiengesellschaft Brown, Boveri & Cie. Spark gap system for magnetically quenched surge voltage arrester. 3,670,204, Cl. 317-61.500
Grewcock, Sidney B.; Cooper, Alan; Amos, Arthur; and Sylvester, Paul, to Barber & Nicholls Limited. Circular knitting machine. 3,668,899, Cl. 66-140.000
Griffith Laboratories, Inc., The: *See—*
Sair, Louis; and Melcer, Irving, 3,669,677.
Grillo-Werke Aktiengesellschaft: *See—*
Lowicki, Norbert; and Teggers, Hans, 3,669,617.
Grobert, Paul H., to Communications & Systems, Inc. High frequency four quadrant multiplier. 3,670,155, Cl. 235-194.
Gross, Jurnjochen: *See—*
Burgard, Ernst; and Gross, Jurnjochen,3,669,279.
Gross, Robert I., to Pall Corporation. Separator of the semipermeable membrane type. 3,668,837, Cl. 55-158.000
Grossbudde, Willi. Wire joints. 3,668,741, Cl. 24-27.000
Grossimon, Herbert P.; McDonough, James O.; and Roberge, James K., to Concord Control, Inc. Intervalometer. 3,670,180, Cl. 307-244.000
Grossman, Milton J. Extruded shelving and extruded support means therefor. 3,669,035, Cl. 108-152.
Grove, Marvin H.; and Van Arsdale, Lyle R., to M & J Valve Company. Meter proving method and apparatus. 3,668,923, Cl. 73-3.000
Grove Valve and Regulator Company: *See—*
Gerbic, Charles C., 3,669,142.
GSW Limited-GSW Limitee: *See—*
Goto, Kazuhiro, 3,669,389.
GTE Automatic Electric Laboratories Incorporated: *See—*
Zellmer, Neale A.; and Johnson, Wayne B., 3,670,233.
GTE Sylvania Incorporated: *See—*
Burney, Charles F., 3,670,058.
Gubler, Kurt; Meyer, Urs; and Brechbuhler, Hans Ulrich, to Geigy Chemical Corporation. 2-Hydroxy-and 2-mercapto-5-thiazolinyl-2'-pyridines. 3,669,976, Cl. 260-294.8
Gude, Klaus Erik; and Lund, Bjorn, to Aktieselskabet Niro Atomizer. Process for producing cement from cement slurry and a plant for carrying out the process. 3,669,432, Cl. 263-32.00r
Gueret, Herve, to Societe des Procedes Modernes d'Injection Sopromi. Electromagnetic fuel injectors for internal combustion engines. 3,669,361, Cl. 239-585.000
Guettier, Michel, to Regie Nationale des Usines Renault, and Automobiles Peugeot. Braking pressure distributing devices. 3,669,510, Cl. 303-22.
Guichon, Robert Julien Joseph. Direct sluice valve for pipes conveying products at high temperature. 3,669,149, Cl. 137-625.480
Gulf Research & Development Company: *See—*
Beach, Horace J.; En Dean, Howard J.; Frawley, Frank E.; and Yates, Dick, 3,669,700.
Gurkin, Martin; Sanderson, Gary Warner; and Studer, Victor Vernon, to Lipton, Thomas J., Inc. Peroxide extraction of tea leaf. 3,669,680, Cl. 99-77.000
Gutman, Nathan; Moser, Raymond L.; Oldenburg, Dorrance; and Sunderlin, Donald E., to Caterpillar Tractor Company. Drive mechanism for tree harvesters. 3,669,161, Cl. 144-3.
Gutton, Henri; and Hugon, Jean Jacques, deceased0 (by Hugon, Simone Jeanne Georgette0Augarde, Marie Jeanne0Hugon, Emile; heirs). Method and device for radiating megametric radio waves. 3,670,247, Cl. 325-28.000
Guyton, David. Optical system for varying the power range and scale spacing in a lens measuring instrument. 3,669,529, Cl. 351-17.
Guyton, David. Lens for forged image displacement in a lens measuring instrument. 3,669,530, Cl. 351-17.
Guzik, Rudolph P.: *See—*
Savit, Joseph; Guzik, Rudolph P.; Wayne, Harry A.; Saklikar, Arvind R.; and Van Eck, Jack M.,3,669,073.
Haas, Josef: *See—*
Reber, Willy Ernst; Nigst, Henry; Haas, Josef; Batzer, Hans; and Zuppinger, Paul,3,669,708.
Haas, Werner E. L.: *See—*
Adams, James E.; and Haas, Werner E. L.,3,669,525.
Habayeb, Jabbour: *See—*
Soussa, Elie Michel; and Habayeb, Jabbour,3,669,126.
Haberl, John F.: *See—*
Glegg, Keith C. M.; Haberl, John F.; Baumans, Hans W.; and Piibe, Rein,3,670,329.
Hackett, William H., Jr.; Schafetter, Donald L.; and Varnerin, Lawrence J., Jr., to Bell Telephone Laboratories, Incorporated. Doping profile for gap diodes improved electroluminescent efficiency. 3,669,767, Cl. 148-171.000
Hackman, Frank C.: *See—*
Luckenbill, Lawrence F.; and Hackman, Frank C.,3,669,475.
Haefner, Fred F. Automotive safety device. 3,669,210, Cl. 180-103.000
Haegland, Borge F.: *See—*
Lindtveit, Torleif; Johnsen, Leif; and Haegland, Borge F.,3,668,778.
Haegland, Marit: *See—*
Lindtveit, Torleif; Johnsen, Leif; and Haegland, Borge F.,3,668,778.
Haffner, Donald G.: *See—*
Akgulian, Sahag C.; Haffner, Donald G.; and Heth, Sherman C.,3,668,844.
Hagdorn, Manfred Otto; and Sandberg, Kjell T-son, to Aktiebolaget Electrolux. Reciprocating engine. 3,668,974, Cl. 91-242.000
Hagen, Siegfried Hendrik, to U.S. Philips Corporation. Voltage-dependent resistors. 3,670,214, Cl. 317-234.
Haggis, Geoffrey Arthur; Jones, Michael Edward Benet; and Knight, Michael Horace, to Imperial Chemical Industries Limited. Carbon fibre-reinforced polyurethane composites. 3,669,920, Cl. 260-37.00n
Hahm, Heinz: *See—*
Marschall, Helmut; Kammermayer, Wolfgang; Beller, Hans Albert; Hahm, Heinz; and Belart, Juan,3,669,226.
Hahn, Henry: *See—*
Divecha, Amarnath P.; Lare, Paul J.; Ordway, Fred, Jr.; Hermann, Robert A.; Van Blaricon, Orville B.; and Hahn, Henry,3,668,748.
Haist, Grant M.; and Humphlett, Wilbert J., to Eastman Kodak Company. Photographic compositions containing bis- isothiuronium compounds as development activators and image stabilizers. 3,669,670, Cl. 96-95.000
Haldezos, Tony: *See—*
Chrysanthis, Chris A.; and Kourtoglou, George Chris, 3,669,254.
Halfhill, Martin O.: *See—*
Matthews, Richard D.; Halfhill, Martin O.; Sordello, Frank J.; and Yang, Harold S.,3,670,316.
Halgren, John A.: *See—*
Young, William P.; and Halgren, John A.,3,669,652.
Hall, Garth O., to Universal Oil Products Company. Combination hydraulic-pneumatic suspension system for vehicle occupants. 3,668,870, Cl. 60-54.50r
Hall, John B., to International Flavors & Fragrances, Inc. Alkadienyl pyridines and pyrazines as perfumes. 3,669,908, Cl. 252-522.000
Hall, Joshua D. Portable steps for a vehicle or the like. 3,669,218, Cl. 182-97.000
Hall, Roger P., to SCM Corporation. Adhering resins to substrates, especially metal, by radiation. 3,669,825, Cl. 161-188.000
Hall, Roger P.; Pratt, Ivor; and Young, Richard A., to SCM Corporation. Adhering resins to substrates, especially metal, by radiation. 3,669,796, Cl. 156-272.000
Hall, William K., Jr. Air flow control system. 3,669,349, Cl. 236-13.
Halliburton Company: *See—*
Knox, John A.; Keeney, Bill R.; and Lasater, Reginald M., 3,669,613.
Hallmark Cards, Incorporated: *See—*
Spaw, Eugene S.; McGrath, Paul F.; and Otto, Stanley W., 3,669,014.
Hallock, David D.; and Halsted, Abel S., to Hughes Aircraft Company. Gas laser with discharge and gas return paths through a common cylindrical body. 3,670,262, Cl. 331-94.500
Hallock, David D.: *See—*
Halsted, Abel S.; and Hallock, David D.,3,670,261.
Halsted, Abel S.: *See—*
Hallock, David D.; and Halsted, Abel S.,3,670,262.
Halsted, Abel S.; and Hallock, David D., to Hughes Aircraft Company. Anode design for gas discharge lasers. 3,670,261, Cl. 331-94.500
Hamamoto, Kazuo; Matsuoka, Michio; and Masuyama, Takeshi, to Matsushita Electric Industrial Co., Ltd. Voltage variable resistors. 3,670,221, Cl. 317-238.
Hammond Machinery Builders, Inc.: *See—*
Bass, Miles M., 3,669,459.
Hamrick, James C.; and Ruddick, Howard G., to Vet Line Products, Inc. Line throwing gun. 3,669,087, Cl. 124-11.
Handa Giken Kogyo Kabushiki Kaisha: *See—*
Miyaki, Kiyoshi; and Kogure, Hiroshi, 3,669,085.
Hanft, Herbert. Slide ruler to adjust length of typewritten line. 3,668,782, Cl. 33-174.00r
Hanko, Jimmy J., to Weyerhaeuser Company. Display carton with inner shelf panel and a holding feature. 3,669,253, Cl. 206-45.140
Hanratty, Robert J.: *See—*
Charlton, Gregory G.; Hanratty, Robert J.; and Ohta, Hiram H.,3,670,336.
Hanscom, Genevieve I.: *See—*
Babb, Raymond E., 3,669,263.
Babb, Raymond E., 3,669,263.
Hansen, Gerhard. Apparatus for filling containers of the thermoplastic synthetic material. 3,669,602, Cl. 18-5.0bf
Hansen, Harvey Gordon, to Sylvania Electric Products, Inc. Releasable closure mechanism. 3,669,304, Cl. 220-55.00k
Hanson, Laurence B.; and Arthur, Wallace W., to Gardner-Denver Company. Control system for rock drills. 3,669,197, Cl. 173-19.000
Hanson, Richard E.; and Lippitt, Raymond F., to Nelson, L. R., Mfg. Co., Inc. Pivot move agricultural irrigation system with improved

water distribution and sprinkler head utilized therewith. 3,669,353, Cl. 239r177.000

Hanzawa, Teruo: *See—*
Iwama, Masakuni; Inoue, Isaburo; Hanzawa, Teruo; Sakamoti, Kenro; and Endo, Takaya,3,669,671.

Happ, George M.; and Kottmeier, Merrill F. Magnetic structure for treating liquids containing calcareous matter. 3,669,274, Cl. 210-222.000

Hara, Yoshiteru: *See—*
Komatsu, Noboru; Suzuki, Takatoshi; Ito, Takuo; Hara, Yoshiteru; and Asakura, Kouichi,3,668,917.

Harada, Koichi: *See—*
Nakaguchi, Kohei; Nishikida, Tomozumi; Kawasumi, Shohachi; Maemoto, Kenichi; Sano, Takezo; Fujii, Yoshikazu; Harada, Koichi; and Ueda, Keijyu,3,669,945.

Harada, Minoru: *See—*
Homma, Shumzo; and Harada, Minoru,3,669,648.

Harbrecht, Karl; and Munn, Gerhard, to Rheinmetall G.m.b.H. Recoil mechanism for machine guns with a hydraulic counter-recoil brake. 3,668,969, Cl. 89-43.000

Harbulak, Edward P., to M & T Chemicals Inc. Zinc electroplating electrolyte and process. 3,669,854, Cl. 204-55.00r

Hardinge Brothers Inc.: *See—*
Parsons, Hubert J., 3,669,462.

Hardison, Jack E.: *See—*
Howell, Eddie P.; Youngman, Carl A.; Hardison, Jack E.; and Tribble, Robert E.,3,668,927.

Hardy, Richard W.; Knowlen, Robert B.; Sandifer, Cecil W.; and Plake, William C., to United States of America, Atomic Energy Commission. Personnel plutonium monitor. 3,670,164, Cl. 250-83.30r

Hargash, Paul, to Dow Chemical Company, The. Tray forwarding mechanism. 3,669,248, Cl. 198-221.

Harita, Yasuhiro: *See—*
Tabuchi, Ichiro; Iwami, Akira; Harita, Yasuhiro; and Yamamoto, Toshiaki,3,669,284.

Harker, Royce Kenneth; Prickett, Warren Wilson; and Roesch, Kurt Fritz, to American Can Company. One-way valve insert for collapsible dispensing containers. 3,669,323, Cl. 222-490.000

Harman, Harold: *See—*
Moulton, Alexander Eric; and Harman, Harold,3,669,225.

Harman, James D. Plastic building block. 3,668,832, Cl. 52-591.

Harper, Billy Gene; Bashaw, Robert Niles; and Atkins, Bobby Leroy, to Dow Chemical Company, The. Absorbent product containing a hydrocolloidal composition. 3,669,103, Cl. 128-156.000

Harris, Max: *See—*
Josephart, David, 3,668,906.

Harris, Norman M. Orthopedic traction apparatus. 3,669,102, Cl. 128-84.00r

Harris, Paul Anthony, to Lucas, Joseph, (Industries) Limited. Battery charging systems. 3,670,229, Cl. 320-59.000

Harris-Intertype Corporation: *See—*
Adams, Dolor N.; and Fauser, Donald L., 3,669,657.
Rosin, Seymour, 3,668,984.

Harrison, Derrick Norman: *See—*
Zanker, Klaus Joachim; and Harrison, Derrick Norman,3,668,931.

Hart, Francis D.: *See—*
Bourguet, Jean M.; and Hart, Francis D.,3,669,903.

Hartelius, Nils Magnus, to Aktiebolaget Volvo. Articulated vehicle frame. 3,669,469, Cl. 280-492.000

Hartman, George F., Jr.: *See—*
Alley, Raymond L.; Hartman, George F., Jr.; and Ewald, John D.,3,668,999.

Hartwig, Rudiger. Clock. 3,668,858, Cl. 58-2.

Harvey, Donald M., to Eastman Kodak Company. Lens housing support linkage for bellows type cameras. 3,668,992, Cl. 95-39.000

Harvey, Edwin Dennis; and Lodge, Frank, to Imperial Chemical Industries Limited. Anthraquinone dyestuffs. 3,669,994, Cl. 260-380.000

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Hasegawa, Katsuji, to Kabushiki Kaisha Meinan Seisakusho. Contact roller in a sanding device. 3,668,753, Cl. 29-121.000

Hashino, Hisaaki: *See—*
Kikuchi, Takeo; and Hashino, Hisaaki,3,669,215.

Hasler A.G.: *See—*
Beaud, Jean-Louis, 3,670,131.

Hataway, James E.: *See—*
Droke, Joseph W.; Hataway, James E.; and Russin, Nicholas C.,3,669,921.

Hatch, Alan R.: *See—*
Marez, John; and Hatch, Alan R.,3,670,102.

Hatcher, Herbert J., to Economics Laboratory, Inc. Gluconic acid production. 3,669,840, Cl. 195-36.00r

Hatfield, Paul E.: *See—*
Allison, Robert J.; Hatfield, Paul E.; and Frumerman, Robert,3,669,623.

Hathaway, Richard A., to Cartridge Television, Inc. Spindle construction for tape transport. 3,669,384, Cl. 242-194.000

Hattori, Hiroshi: *See—*
Mitsukawa, Konosuke; Hattori, Hiroshi; Hikoda, Toyohiko; and Masubuchi, Yoshinori,3,669,792.

Hatz, Ernst, to Motorenfabrik Hatz KG. Internal combustion engine having a cooling-air blower. 3,669,082, Cl. 123-41.650

Hauger, John H.: *See—*
Conroy, Robert E.; and Hauger, John H.,3,668,704.

Hautala, Earl: *See—*
Weaver, Merle L.; and Hautala, Earl,3,669,685.

Hawes, James D., to Tektronix, Inc. Cathode ray tube having auxiliary deflection plate to correct pincushion distortion. 3,670,199, Cl. 315-13.00r

Hayashi, Shigeki: *See—*
Komatsu, Koei; Okuya, Eitaro; Tomioka, Katsuyoshi; Sakai, Masato; Hayashi, Shigeki; Yasunaga, Hidetoshi; and Kogure, Akira,3,669,943.

Hayashi, Toshio, to Minolta Camera Kabushiki Kaisha. Electric shutter control circuitry. 3,668,987, Cl. 95-11.00r

Hayes, Lawrence P., to International Business Machines Corporation. Printed circuit generator. 3,668,990, Cl. 95-12.000

Hayes, Robert R.; Fuller, John L.; and Stockham, James R., to Oglebay Norton Company. Method and apparatus for forming refractory panels. 3,669,449, Cl. 271-74.000

Hazeltine Corporation: *See—*
Vasile, Carmine F., 3,670,271.

Health-Mor, Inc.: *See—*
Fairaizl, Max L.; and Schneerman, John F., 3,668,734.

Heath & Sherwood Drilling Limited: *See—*
Hokanson, Lyle W.; Savage, James R.; Smith, E. Peter; Levangie, Gilbert; and Klaas, William, 3,669,196.

Heberlein Patent Corporation: *See—*
Ritter, Helmut, 3,669,330.

Hecht, Paul F.: *See—*
Drew, Dennis H.; and Hecht, Paul F.,3,669,296.

Hedegaard, Arne Marius, to Rothenborg Specialmaskiner for Sy-Industrien A/S. Apparatus for manufacturing pants and tights. 3,669,047, Cl. 112-121.15

Hedstrom Company: *See—*
Boudreau, Alban M., 3,669,463.

Hefendehl, Heinz: *See—*
Benteler, Helmut; Franz-Josef; and Hefendehl, Heinz,3,668,918.

Heiberger, Charles A.; and Mottern, Henry O., to Air Products and Chemicals, Inc., mesne. Polyvinyl alcohol fiber reinforced post-chlorinated polyvinyl chloride resins. 3,670,056, Cl. 260-897.00c

Heidt, Michael F.: *See—*
United States of America,National Aeronautics and Space Administration, Administrator, 3,670,202.

Heinzmann, Werner; and Pfahl, Siegfried, to Messerschmitt-Bolkow Gesellschaft mit beschrankter Haftung. Apparatus for manufacturing flexible signal cable for aerodynamic body. 3,668,851, Cl. 57-18.000

Helicorporation: *See—*
Garfinkle, Marvin, 3,669,564.

Heller, Hansjorg: *See—*
Regenass, Franz; Schlumbom, Peter Christoph; and Heller, Hansjorg,3,669,936.

Heller, Zindel H., to Technicon Instruments Corporation. Apparatus for the elimination and/or detection of scatter signals in atomic fluorescence spectroscopy analysis means. 3,669,544, Cl. 356-85.000

Helminen, Toivo A., to Kimberly-Clark Corporation. Method and apparatus for affixing fasteners to a moving web. 3,668,771, Cl. 29-431.000

Helpert, Edward Philip: *See—*
Rempert, Lawrence Arnold; and Helpert, Edward Philip,3,670,153.

Helyer, Lawrence Edward, to J & T Engineers (Ascot) Limited. Fluid injectors. 3,669,354, Cl. 239-126.000

Hengstler, J., K.G.: *See—*
Kratt, Kurt, 3,670,152.

Hennig, Fridolin: *See—*
Winkler, Alfred; Theer, Anton; Zanner, Johann; and Hennig, Fridolin,3,668,989.

Henry, Nelson R.; and Middour, Donald R., to Woodman Company, Inc., The. Vibrating clamp product settler. 3,668,815, Cl. 53-24.

Henschen, Homer Ernst: *See—*
Desso, Thomas Dean; and Henschen, Homer Ernst,3,669,054.

Henshaw, Charles Edward, to Pennwalt Corporation. Vacuum drying and stoppering apparatus. 3,668,819, Cl. 53-102.000

Herbst, Murry. Combination teether and pacifier. 3,669,117, Cl. 128-360.000

Hercules Incorporated: *See—*
Breslow, David S., 3,670,023.
Downs, Ned E., 3,669,275.
Leibfried, Raymond T., 3,670,013.

Hermann, Robert A.: *See—*
Divecha, Amarnath P.; Lare, Paul J.; Ordway, Fred, Jr.; Hermann, Robert A.; Van Blaricon, Orville B.; and Hahn, Henry,3,668,748.

Heroy, Giles F., to Angola Wire Products, Inc. Display shelf divider. 3,669,278, Cl. 211-184.000

Herpfer, Eugen: *See—*
Romhild, Peter; and Herpfer, Eugen,3,669,371.

Herrmann, Otto: *See—*
Krall, Heribert; Maag, Helmut; Herrmann, Otto; and Posl, Rudolf,3,669,176.

Herron, Rand E., to Technicon Instruments Corporation. Method and apparatus for sampling. 3,668,936, Cl. 73-423.00a
Herzog, Johann: *See—*
Klotzbach, Kurt; and Herzog, Johann,3,669,808.
Heskett, Don Edward: *See—*
Burkhalter, Robert, Jr.; Heskett, Don Edward; and Hoover, Frank Kryder,3,669,148.
Hess, Hans-Jurgen E., to Pfizer Inc. Trialkoxy quinazolines. 3,669,968, Cl. 260-256.50r
Hess, Robert L., to Raychem Corporation. Recoverable article. 3,669,824, Cl. 161-166.000
Hesston Corporation: *See—*
Gaeddert, Melvin V.; and Wiggers, Verlin, 3,669,123.
Heth, Sherman C.: *See—*
Akgulian, Sahag C.; Haffner, Donald G.; and Heth, Sherman C.,3,668,844.
Hewlett-Packard Company: *See—*
Gordon, Gary B., 3,670,245.
Lacey, Richard F.; Cutter, Leonard S.; and Turner Wilson S., 3,670,171.
Heyer, William T., to Heyer-Schulte Corporation. Device and method for measuring intracranial pressure. 3,669,094, Cl. 128-2.
Heyer, William T., to Heyer-Schulte Corporation. Drainage catheter with anti-clogging means. 3,669,116, Cl. 128-350.00r
Heyer-Schulte Corporation: *See—*
Heyer, William T., 3,669,094.
Heyer, William T., 3,669,116.
Heyman Manufacturing Company: *See—*
Klumpp, Ferdninand, Jr., 3,670,298.
Hieber, Ellsworth E.; Taquino, Thomas P.; and Hillery, Frank Edward. Flight refueling receptacle having pressure-inertial release valve. 3,668,976, Cl. 91-422.000
Hielscher, Frank H.: *See—*
Lehovec, Krut; Hielscher, Frank H.; and Preier, Horst M.,3,670,198.
Higgins, Ralph G., Jr.: *See—*
Allman, William T., Jr.; Joseph, Charles W.; and Higgins, Ralph G., Jr.,3,669,788.
Hikoda, Toyohiko: *See—*
Mitsukawa, Konosuke; Hattori, Hiroshi; Hikoda, Toyohiko; and Masubuchi, Yoshinori,3,669,792.
Hill, Donald G.: *See—*
Bukosky, Allen A.; Flavin, Michael A.; Hill, Donald G.; Huizinga, Donald D.; and Ritchey, James F.,3,670,111.
Hill, Homer G.: *See—*
Wong, Robert; and Hill, Homer G.,3,669,638.
Hillery, Frank Edward: *See—*
Hieber, Ellsworth E.; Taquino, Thomas P.; and Hillery, Frank Edward,3,668,976.
Himmler, Conrad Richard, to Mannesmann-Meer Aktiengesellschaft. Power regulation for fluid machines. 3,669,570, Cl. 417-222.000
Hingst, Gerd: *See—*
Kundler, Walter; and Hingst, Gerd,3,670,227.
Hinton, Ray F., to United States of America, Navy. Method of making deep ocean buoyant material. 3,669,912, Cl. 260-2.50b
Hintz, Hans, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Self-extinguishing thermoplastic molding compositions. 3,669,923, Cl. 260-41.00c
Hirabayashi, Masahide, to Kabushiki Kaisha Suwa Seikosha. Dial and movement fixing structure for a watchcase. 3,668,865, Cl. 58-127.00b
Hirata, Hiroshi; and Arai, Masanao, to Matsushita Electric Industrial Co., Ltd. Device for measuring an activity of cupric ions. 3,669,862, Cl. 204-195.00m
Hirata, Masaharu, to Shionogi & Co., Ltd.Process for stabilization of a composition of 2*g*, 3_{α}-epithio-androstanes and composition obtained thereby. 3,670,080, Cl. 424-241.000
Hirner, Robert Eugene, to Abbott Laboratories. Dicyclohexylthiourea corrosion inhibitor composition. 3,669,902, Cl. 252-391.000
Hirose, Juichi: *See—*
Nakao, Osakazu; Nakagawa, Saburo; Hirose, Juichi; Yamazaki, Shigeyuki; Amano, Takashi; Nakamura, Toshio; and Yamamoto, Hiroyuki,3,669,916.
Hirose, Yoshio: *See—*
Niwa, Kunimori; Shibai, Hiroshiro; Yasunaga, Masahiro; Hirose, Yoshio; and Shiro, Teruo,3,669,844.
Hiroshima, Tatsuo: *See—*
Shiraiwa, Toshio; and Hiroshima, Tatsuo,3,670,239.
Hirs, Gene, to Hydromation Engineering Company. Method of and apparatus for filtering. 3,669,882, Cl. 210-33.000
Hirsch, Peter, to Bell Telephone Laboratories, Incorporated. Arrays with nulls steered independently of main beam. 3,670,335, Cl. 343-100.0sa
Hitachi, Ltd.: *See—*
Hohsho, Yukio; Yamada, Koichiro; Oyama, Yoshishige; Teranishi, Takao; and Suzuki, Seikou, 3,669,423.
Kumada, Akio; Suzuki, Kenkichi; and Kitta, Kenichi, 3,670,211.
Oishi, Asao; and Sashino, Shozzo, 3,669,560.
Hoarau, Roland J.: *See—*
Besson, Jean R.; Cumer, Joseph F.; and Hoarau, Roland J.,3,669,549.
Hobden, Maurice Vernon; Rich, George Joseph; and Robertson, Daniel Stewart, to National Research Development Corporation. Piezoelectric devices utilizing lithium germauate. 3,670,186, Cl. 310-9.500
Hock, Kenneth R.: *See—*
Chiu, Thomas T.; Hock, Kenneth R.; and Nagle, Floyd B.,3,669,718.
Hodge, Dean E.: *See—*
Karr, Melvin R.; and Hodge, Dean E.,3,669,676.
Hoeber, Gerhard: *See—*
Hubel, Egon; and Hoeber, Gerhard,3,670,237.
Hoehn, Hans; and Schulze, Ernst, to Squibb, E . R., & Sons, Inc.Dipyrazolo[3,4-*β*:3,4D]-pyridin-3-ones. 3,669,950, Cl. 260-295.50t
Hoelzinger, Walther J.; Wenninger, Johann; Mayer, Walter; Zoegernitz, Karl; Schroetter, Hermann; and Braun, Werner, to Boise Cascade Corporation. Apparatus for impregnating corrugated cardboard. 3,669,064, Cl. 118-39.000
Hofer, Hans. Freezing apparatus. 3,668,886, Cl. 62-345.000
Hoffmann-La Roche Inc.: *See—*
Gloor, Urs; Ruegg, Rudolf; and Ulrich, Schwieter, 3,670,031.
Schaeren, Sidney Frank, 3,669,984.
Hofmann, Eberhard, to Bosch, Robert, G.m.b.H. Roller tappet guard. 3,668,945, Cl. 74-569.000
Hofmann, Erich; Krull, Ernst; Johannsen, Werner Hans; Oberheim, Robert; and Scheibel, Josef, to Braun Aktiengesellschaft. Slide projector and viewer. 3,669,534, Cl. 353-21.000
Hofmann, Fritz, to Messerschmitt-Bolkow Gesellschaft mit beschrankter Haftung. Method and apparatus for converting multipulse commands into command units for transmission. 3,670,248, Cl. 325-141.000
Hogg, Walter R.; and Figueroa, David R., to Coulter Electronics, Inc. Dynamic range splitter for an analyzer of particle-produced pulses. 3,670,150, Cl. 235-151.3
Hoglund, Nils, to Tri-Ordinate Corporation, mesne. Apparatus for simultaneously drilling and tapping a plurality of work pieces at each of a plurality of positions. 3,669,558, Cl. 408-43.000
Hogue, Ephraim W., to United States of America, Postmaster General. Color gradient detector device. 3,670,169, Cl. 250-226.000
Hohsho, Yukio; Yamada, Koichiro; Oyama, Yoshishige; Teranishi, Takao; and Suzuki, Seikou, to Hitachi, Ltd. Carburetor. 3,669,423, Cl. 261-36.00a
Hokama, Takeo: *See—*
Kahn, Henry; and Hokama, Takeo,3,669,947.
Hokanson, Lyle W.; Savage, James R.; Smith, E. Peter; Levangie, Gilbert; and Klaas, William, to Heath & Sherwood Drilling Limited. Universal drilling rig. 3,669,196, Cl. 173-44.000
Holden, Ronald L., to Therm-O-Disc, Incorporated. Motor overload protector. 3,670,283, Cl. 337-354.000
Holdrege, Charles Truman, to Bristol-Myers Company. 6-[N-(Substituted-imidoyl)-aminoacetamido] pencillanic acids. 3,669,958, Cl. 260-239.100
Holes, William W.; and Wenstrom, Roger A. Photograph album pages and method of making the same. 3,669,555, Cl. 402-8.
Holmes, Jack H., to Kwik Lok Corporation. Semi-automatic closure applicator. 3,668,818, Cl. 53-67.000
Holstrom, Allan, to Fasco Industries, Inc. Central vacuum cleaner control system. 3,669,145, Cl. 137-567.000
Homma, Shumzo; and Harada, Minoru, to Nippon Soda Co., Ltd. Process for the preparation of high purity metallic titanium. 3,669,648, Cl. 75-84.500
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Honda, Soichiro, 3,669,203.
Honda, Soichiro, to Honda Giken Kogyo Kabushiki Kaisha. Air-cooling apparatus for automotive engine. 3,669,203, Cl. 180-54.
Honeywell Inc.: *See—*
Mott, Richard C., 3,669,561.
Semienko, Peter P.; and Toledo, Emil, 3,669,865.
Honeywell Information Systems, Inc.: *See—*
Fox, David J.; King, Jane E.; and Nardelli, Orazio J., 3,670,306.
Hongo, Toshio. Combination hydraulic shearing and pressbrake machine. 3,668,919, Cl. 72-453.
Honn, James B.: *See—*
Platz, Gerald M.; and Honn, James B.,3,669,347.
Hood, John W.: *See—*
Tobey, Hubert E.; Masiuk, Alphonse M.; Hood, John W.; and Irvin, Dee L.,3,669,165.
Hooker Chemical Corporation: *See—*
Dorfman, Edwin; Emerson, William E.; Bean, Claude T., Jr.; and Carr, Russell L. K., 3,669,941.
Hoover Ball and Bearing Company: *See—*
Meyers, John S.; and Wolofski, Nicholas, 3,669,498.
Hoover, Frank Kryder: *See—*
Burkhalter, Robert, Jr.; Heskett, Don Edward; and Hoover, Frank Kryder,3,669,148.
Hoppmann Corporation: *See—*
Hoppmann, Kurt H.; and Schober, Horst A., 3,669,260.
Hoppmann, Kurt H.; and Schober, Horst A., to Hoppmann Corporation. Method of sorting particulate articles. 3,669,260, Cl. 209-73.000
Horak, Heinz, to Apparatefabrik A.G. Huttwil. Open shed double lift-jacquard machine. 3,669,154, Cl. 139-63.000
Horer, Oswald; and Bujor, Eugen, to Institutul de Virusologie 'Stefan S. Nicola E'. Device for analyzing chromatographic disc in a spectrophotometer. 3,669,554, Cl. 356-244.

Hori, Hiroo: *See—*
Nakagawa, Takashi; Tsutsumi, Tadashi; and Hori, Hiroo,3,670,213.
Hori, Kikuo; and Sato, Yoshito, to Teijin Ltd. Method of taking up yarns of synthetic fibers. 3,669,373, Cl. 242-18.0ew
Horkey, Alan D. Rake and broom combination. 3,668,850, Cl. 56-400.040
Horton, David M.: *See—*
Boost, Charles C.; Mitchell, William S.; and Horton, David M.,3,669,870.
Horvath, William, to Diamond International Corporation. Safety cap for container. 3,669,295, Cl. 215-9.000
Hoshi, Hiroshi: *See—*
Susuki, Rinnosuke; Hoshi, Hiroshi; Araki, Shinichi; and Ohshita, Takashi,3,669,321.
Hoshino, Kazuo; and Kanemitsu, Akio, to Kyowa Hakko Kogyo Co., Ltd. Fortification of food or alcoholic beverages with copolypeptides. 3,669,689, Cl. 99-140.00r
Hotes, Charles M.: *See—*
Blanchet, James P.; Hotes, Charles M.; and Reynolds, Thomas J.,3,669,329.
Houck, Deward J., to International Scanatron Systems Corporation. Phasing system for facsimile recorders. 3,670,105, Cl. 178-69.5
Hovnanian, Vram E.; and Kitzmiller, Edward, to Logic Dynamics, Inc. Microelectronic package, buss strip and printed circuit base assembly. 3,670,208, Cl. 317-101.
Hovy, J. W. Hermann: *See—*
Borck, Joachim; Dahm, Johann; Koppe, Volker; Kramer, Josef; Shorre, Gustav; Hovy, J. W. Hermann; and Schorscher, Ernst,3,669,956.
Hovy, Jan Willem Herman: *See—*
Borck, Joachim; Dahm, Johann; Koppe, Volker; Kramer, Josef; Schoree, Gustav; Hovy, Jan Willem Herman; and Schorscher, Ernst,3,669,973.
Borck, Joachim; Dahm, Johann; Koppe, Volker; Kramer, Josef; Schorre, Gustav; Hovy, Jan Willem; and Schorscher, Ernst,3,669,972.
Howard, Darwin R. Holder for tetrahedron packages. 3,669,343, Cl. 229-42.000
Howe, Charles E.: *See—*
Brown, Gaylord W.; Russell, Edward J.; Howe, Charles E.; and Schnepp, Bradley A.,3,669,594.
Howe, John Arthur, to TRW Inc., mesne. Electrical switch. 3,670,121, Cl. 200-67.00g
Howell, Eddie P.; Youngman, Carl A.; Hardison, Jack E.; and Tribble, Robert E., to Atlantic Richfield Company. Borehole thermal conductivity measurements. 3,668,927, Cl. 73-154.000
Howell, Eunice Cockburn: *See—*
Altounyan, Roger Edward Collingwood; and Howell, Harry,3,669,113.
Howell, Harry: *See—*
Altounyan, Roger Edward Collingwood; and Howell, Harry,3,669,113.
Howmet Corporation: *See—*
Ingalls, John E.; and Yaker, Charles, 3,669,177.
Howson, W. H., Limited: *See—*
Watkinson, Leonard James; and Moore, Brian Joseph, 3,669,668.
Hromatka, Otto; and Binder, Dieter, to Invag Aktiengesellschaft. Thieno-diazepin-ones. 3,669,959, Cl. 260-239.300
Hubel, Egon; and Hoeber, Gerhard, to Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Apparatus for the smooth switching-on of an electrical load. 3,670,237, Cl. 321-47.000
Huber, Albert: *See—*
Braumann, Gundokar; Klor, Walter; and Huber, Albert,3,670,272.
Huckstedt, Guido; and Tunze, Norbert. Foam flotation separation system particularly suitable for separating dissolved protein compounds and toxic metallic ions from aquarium water. 3,669,883, Cl. 210-44.000
Hughes Aircraft Company: *See—*
Bilow, Norman, 3,669,929.
Broadbent, Berne D., 3,670,312.
Hallock, David D.; and Halsted, Abel S., 3,670,262.
Halsted, Abel S.; and Hallock, David D., 3,670,261.
Moulin, Norbert L., 3,669,261.
Richardson, John M., 3,669,528.
Siegfried, Hansen, 3,668,932.
Hughes, Donald W., Jr. Battery closure device. 3,669,755, Cl. 136-170.000
Hughes, Edward Victor Lawson, to Corporation of the City of Coventry. Hydrostatic/hydrodynamic shaft bearing arrangements. 3,669,517, Cl. 308-122.
Hughes, William W., to Westvaco Corporation. Dispenser for continuous business forms. 3,669,341, Cl. 229-33.000
Hugon, Emile: *See—*
Gutton, Henri; and Hugon, Jean Jacques,3,670,247.
Hugon, Jean Jacques: *See—*
Gutton, Henri; and Hugon, Jean Jacques,3,670,247.
Hugon, Simone Jeanne Georgette: *See—*
Gutton, Henri; and Hugon, Jean Jacques,3,670,247.
Huizinga, Donald D.: *See—*
Bukosky, Allen A.; Flavin, Michael A.; Hill, Donald G.; Huizinga, Donald D.; and Ritchey, James F.,3,670,111.
Hull, Glenn Arden, to CPC International Inc. Quaternary pyridinium salt-starch ether derivatives. 3,669,955, Cl. 260-233.30r
Hulley, Bernard James, to Imperial Chemical Industries Limited. Method and apparatus for product sampling. 3,668,934, Cl. 73-421.00r
Hummel, Donald L.: *See—*
Maurer, Robert F.; Mc Vay, Robert D.; and Hummel, Donald L.,3,669,581.
Humphlett, Wilbert J.: *See—*
Haist, Grant M.; and Humphlett, Wilbert J.,3,669,670.
Hunt, Philip A., Chemical Corporation: *See—*
Kosel, George E., 3,669,886.
Hurst, George P. Wire rope suspension system and rope connector for rotary dryers and the like. 3,669,433, Cl. 263-33.00r
Hurwitz, Mathew. Self-donning sphygmomanometer cuff. 3,669,096, Cl. 128-2.05c
Husa, Richard; and Stark, James A. Method for disinterring a casket. 3,669,614, Cl. 21-2.000
Husni, Saleem Ynees, to RCA Corporation. Method of connecting semiconductor device to terminals of package. 3,668,770, Cl. 29-423.000
Huth, Gerald C., to General Electric Company. Silicon device having a lead-silicate thereon and method of forming the same. 3,669,731, Cl. 117-201.000
Hutton, William L., to Shriver T., & Company, Inc. Filter press plate process and apparatus. 3,669,267, Cl. 210-75.000
Hycor, Inc.: *See—*
Hyman, Joseph, 3,669,133.
Hydromation Engineering Company: *See—*
Hirs, Gene, 3,669,882.
Hydrovane Compressor Company Limited, The: *See—*
Carter, Alan, 3,669,579.
Hyman, Joseph, to Hycor, Inc. Collapsible rod. 3,669,133, Cl. 135-45.000
Hyosaka, Alfred M.; Giebelhausen, Charles W.; and Kaufman, Arthur L., to Speed-O-Print Business Machines Corporation. Photocopy machine. 3,669,535, Cl. 355-8.000
Idei, Gijun; and Numata, Saburo, to Tokyo Shibaura Electric Co., Ltd., and Fuji Shashin Kouki Kabushiki Kaisha. Light sensitive amplifier circuit having improved feedback arrangement. 3,670,184, Cl. 301-311.000
Idel, Vladimir Viktorovich. Cutter-grinding machines. 3,668,812, Cl. 51-165.87
Iguchi, Masayuki: *See—*
Inoue, Komei; and Iguchi, Masayuki,3,670,177.
Iida, Yoshio: *See—*
Masuyama, Takeshi; Amemiya, Toshioki; and Iida, Yoshio,3,670,216.
IIT Research Institute: *See—*
Dahn, Carl James; and Van Den Heuvel, Anthony P., 3,669,022.
Iler, Ralph K.; and Palmer, Alan B., du Pont de Nemours, E. I., and Company. Titanium and/or zirconium nitride based articles of jewelry. 3,669,695, Cl. 106-43.000
Ilford Limited: *See—*
Chapman, Eric George Arthur, 3,668,962.
Illinois Tool Works, Inc.: *See—*
Erlenbach, Walter, 3,670,297.
Illman, Walter F.: *See—*
Fusco, Vito A.; Ogden, Charles T.; and Illman, Walter F.,3,668,852.
Imagawa, Katsuhiko: *See—*
Matsuura, Hideo; Imagawa, Katsuhiko; and Murase, Yoshihiko,3,669,214.
Imahori, Yutaka: *See—*
Kamegaya, Takeo; Imahori, Yutaka; Ohta, Akira; Kanoh, Tadao; and Ohara, Akio,3,670,195.
Imai, Tomio; Shimamura, Mutsuo; Yoshitake, Juichi; and Ohiwa, Hitoshi, to Godo Shusei Kabushiki Kaisha. Method for the preparation of pentitol from pentose by using bacteria. 3,669,845, Cl. 195-43.000
Imperial Chemical Industries Limited: *See—*
Baker, Alan Stuart; and Walbridge, Derek John, 3,669,939.
Briscoe, Josiah Alfred, 3,669,552.
Deans, David Robert, 3,668,834.
English, Geoffrey; and Mountfield, Brian Arthur, 3,669,910.
Freeman, Peter Frank Hilary; Shephard, Margaret Claire; and Snell, Brian Kenneth, 3,670,077.
Haggis, Geoffrey Arthur; Jones, Michael Edward Benet; and Knight, Michael Horace, 3,669,920.
Harvey, Edwin Dennis; and Lodge, Frank, 3,669,994.
Hulley, Bernard James, 3,668,934.
Moody, Anthony Gifford; and Symcox, Robert Owen, 3,670,011.
Imperial Chemical Industries of Australia and New Zealand Limited: *See—*
Pryor, David Ernest; and Forsyth, Bruce Adam, 3,670,085.
Pryor, David Ernest; and Forsyth, Bruce Adam, 3,670,086.
Imperial Manufacturing and Engineering Company: *See—*
Fink, Frank J., 3,668,772.
Imperial Metal Industries (Kynoch) Limited: *See—*
Mc Dougall, Ian Leitch; and Lock, Michael Charles, 3,669,905.
Inca Inks, Inc.: *See—*
Remer, Robert K., 3,669,720.

Incollingo, Italo: *See—*
Caldo, Cornelio; Danielli, Ezio; Incollingo, Italo; and Protospataro, Francesco,3,669,829.
Indiana University Foundation: *See—*
Muhler, Joseph C., 3,670,076.
Industrial Nucleonics Corporation: *See—*
Fleming, John W., Jr.; and McMullen, James Michael, 3,668,922.
Industrie A. Zanussi S.p.A.: *See—*
Mazza, Lamberto, 3,670,226.
Infodata Systems Incorporated: *See—*
Bharwani, Bansi U.; and Kaplowitz, Harry, 3,670,310.
Information Storage Systems, Inc.: *See—*
Matthews, Richard D.; Halfhill, Martin O.; Sordello, Frank J.; and Yang, Harold S., 3,670,316.
Ingalls, John E.; and Yaker, Charles, to Howmet Corporation. Shell manufacturing method for precision casting. 3,669,177, Cl. 164-26.000
Inglis, John, Frozen Foods Company: *See—*
Cox, James P., 3,669,164.
Inoue, Isaburo: *See—*
Iwama, Masakuni; Inoue, Isaburo; Hanzawa, Teruo; Sakamoti, Kenro; and Endo, Takaya,3,669,671.
Inoue, Kiyoshi, to Lockheed Aircraft Corporation, mesne. Method of spark sintering electrically conductive particles onto a metallic substrate. 3,670,137, Cl. 219-76.000
Inoue, Komei; and Iguchi, Masayuki, to Kabushiki Kaisha Kokuei Kikai Seisakusho. Coin-locker control device. 3,670,177, Cl. 307-141.400
Inoue, Touru; Yamada, Tetsuya; and Noguichi, Seizo, to Nippon Sheet Glass Co., Ltd. Method for production of fused energy- conducting structure. 3,669,639, Cl. 65-4.000
Institut Elektros varki Im. E.O. Patona: *See—*
Paton, Boris Evgenievich; Latash, Jury Vadimovich; Medovar, Boris Izrailevich; Emelianenko, July Georgievich; and Kljuev, Mikhail Markovich, 3,670,089.
Institute of Gas Technology: *See—*
Klass, Donald L.; and Landahl, Carl D., 3,669,637.
Institutul de Virusologie 'Stefan S. Nicola E':*See—*
Horer, Oswald; and Bujor, Eugen, 3,669,554.
Interface Mechanisms, Inc.: *See—*
Allais, David C., 3,670,145.
International Business Machines Corporation: *See—*
Agnihotri, Ram K., 3,669,662.
Amdahl, Gene M.; Arnold, Richard F.; Dauber, Philip S.; Freiman, Charles V.; Robelen, Russell J.; Schorr, Herbert; and Wierzbicki, John R., 3,670,309.
Andresen, Rolf; Fiorino, Benjamin C.; and Niccore, Fred W., 3,670,304.
Arnold, Richard F.; Dauber, Philip S.; Freiman, Charles V.; Robelen, Russell J.; and Wierzbicki, John R., 3,670,307.
Badami, Angelo V.; Ebert, Ekkehard,; Kemlage, Bernard M.; Kroell, Karl E.; and Pogge, H. Bernhard, 3,669,769.
Beausoleil, William F.; Brown, David T.; and Walker, Ernest L., 3,670,313.
Dowd, Albert A., 3,669,327.
Elmgren, Jarl A.; and Rodite, Robert R. R., 3,669,871.
Faigenbaum, Mark A.; Lasky, Daniel J.; and Weisel, Harold C., 3,669,665.
Fowler, Raymond L., 3,669,538.
Hayes, Lawrence P., 3,668,990.
Joyce, James M., 3,670,234.
Kaufmann, Morris; and Shultz, Bernard R., 3,669,757.
Klein, Donald L.; Mac Intyre, Michael W.; and Rothman, Lawrence J., 3,669,669.
Middelhoek, Simon; and Sasso, Giovanni, 3,669,732.
Rooney, James J.; and Walach, Augustyn Z., 3,670,230.
Ruszczyk, James F.; and Secrist, Duane R., 3,670,112.
Skarvinko, Eugene R., 3,669,667.
Tait, John B., 3,669,521.
Tate, Lawrence A., 3,670,314.
Wheelock, Charles E., 3,669,018.
Wheelock, Charles E., 3,669,663.
International Computers Limited: *See—*
Derc, Roman; Eitel, Ronald John Frank; and Bragg, Cecil, 3,669,446.
International Flavors & Fragrances, Inc.: *See—*
Hall, John B., 3,669,908.
International Harvester Company: *See—*
Derrickson, Charles, Jr.; and Rodgers, Robert A., 3,669,488.
Fort, Edward F., 3,669,083.
Johnson, Robert W.; and Porter, Robert B., 3,668,943.
Marquardt, Julius F.; and Wade, Ronald A., 3,668,794.
Nelson, Vaughn A., 3,668,975.
Young, William P.; and Halgren, John A., 3,669,652.
Zurek, James W., 3,669,194.
International Harvester Company of Great Britain Limited: *See—*
Brooke, David W. I., 3,669,205.
Brooke, David William Ingham, 3,669,208.
Brooke, David William Ingham, 3,669,209.
Fellgett, Peter Berners; and Whitfield, George Robert, 3,669,207.
International Scanatron Systems Corporation: *See—*
Houck, Deward J., 3,670,105.
International Standard Electric Company: *See—*
Greenwood, John Christopher, 3,670,130.
International Standard Electric Corporation: *See—*
Abrahamsen, Per Reider, 3,670,104.
Burgard, Ernst; and Gross, Jurnjochen, 3,669,279.
Drake, Cyril Francis; and Amos, Robert Walter James, 3,669,697.
Earp, Charles William; and Overbury, Francis Giles, 3,670,337.
Earp, Charles William, 3,670,338.
Mason, Peter Arthur, 3,669,370.
Micklewright, Percy Leonard; and Scaddan, Ernest Victor, 3,668,763.
Weber, Rudolf; and Jahn, Emil, 3,668,960.
International Telephone and Telegraph Corporation: *See—*
Charlton, Gregory G.; Hanratty, Robert J.; and Ohta, Hiram H., 3,670,336.
Fielding, Francis L., 3,670,200.
Fullerton, James, 3,669,005.
Grant, John M.; and Stolzy, Albert D., 3,669,550.
Mitchell, Reid L.; Muller, Thomas E.; Stevens, Hugh D.; and Tabke, Robert S., 3,670,069.
Rabow, Gerald, 3,670,252.
Tobey, Hubert E.; Masiuk, Alphonse M.; Hood, John W.; and Irvin, Dee L., 3,669,165.
Tracy, William K., 3,670,292.
Invag Aktiengesellschaft: *See—*
Hromatka, Otto; and Binder, Dieter, 3,669,959.
Ionics Incorporated: *See—*
Kirkham, Thomas A.; Arnold, John W.; and Giufrida, Anthony J., 3,669,857.
Irgens, Finn T., to Outboard Marine Corporation. Chain saw with gear drive. 3,669,162, Cl. 143-32.
Irvin, Dee L.: *See—*
Tobey, Hubert E.; Masiuk, Alphonse M.; Hood, John W.; and Irvin, Dee L.,3,669,165.
Ise, Satoshi: *See—*
Konno, Tsuyoshi; Nakazato, Katsuo; and Ise, Satoshi,3,670,182.
Ishanin, Vladimir Pavlovich: *See—*
Solomonov, Nikolai Nikolaevich; Ishanin, Vladimir Pavlovich; and Apsalons, Talvalds-Olavs Arnoldovich,3,668,824.
Ishige, Sadao: *See—*
Kimura, Shiro; Kobayashi, Teruo; and Ishige, Sadao,3,669,710.
Kimura, Shiro; Kobayashi, Teruo; Ishige, Sadao; and Kiritani, Masataka,3,669,711.
Kimura, Shiro; Kobayashi, Teruo; Ishige, Sadao; and Kiritani, Masataka,3,669,712.
Ishikawa, Mitsuo: *See—*
Nozawa, Yoshikuni; Ishikawa, Mitsuo; and Kikuchi, Junjiro,3,669,457.
Itaya, Nobushige; Kamoshita, Katsuzo; Mizutani, Toshio; Kitamura, Shigeyoshi; Nakai, Shinji; Kameda, Nobuyuki; Fujimoto, Keimei; and Okuno, Yositosi, to Sumitomo Chemical Company, Ltd. Cyclopropanecarboxylic acid esters. 3,669,989, Cl. 260-332.20r
Itek Corporation: *See—*
Adachi, Iwao P., 3,669,867.
Oliver, Donald S., 3,670,099.
Ito, Nobuo: *See—*
Shoda, Shichiro; Ito, Nobuo; and Miki, Toshiro,3,670,012.
Ito, Takuo: *See—*
Komatsu, Noboru; Suzuki, Takatoshi; Ito, Takuo; Hara, Yoshiteru; and Asakura, Kouichi,3,668,917.
Itoh, Toshio; Miyamoto, Toshio; and Wada, Yuichi, to Mitsubishi Denki Kabushiki Kaisha. Current limiting device. 3,670,282, Cl. 337-21.
ITT Industries, Inc.: *See—*
Belart, Juan; and Seidel, Ulrich, 3,670,122.
Depenheuer, Otto, 3,670,300.
Ivanhoe Research Corporation: *See—*
Minasian, Harry B., 3,669,441.
Noiles, Douglas G., 3,669,443.
Ivchenko, Georgy Semenovich; Berestovoi, Anatoly Mikhailovich; Khanchas, Vladislav Fedorovich; and Nikodimov, Anatoly Pavlovich. Device for unloading bulk material from reservoirs. 3,669,317, Cl. 222-195.000
Iwama, Masakuni; Inoue, Isaburo; Hanzawa, Teruo; Sakamoti, Kenro; and Endo, Takaya, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide photographic emulsions containing yellow couplers. 3,669,671, Cl. 96-100.000
Iwami, Akira: *See—*
Tabuchi, Ichiro; Iwami, Akira; Harita, Yasuhiro; and Yamamoto, Toshiaki,3,669,284.
Iwamoto, Akira: *See—*
Takenaka, Shigeo; and Iwamoto, Akira,3,669,949.
Iwata, Yoshitaka: *See—*
Fukazawa, Yoshiaki; Iwata, Yoshitaka; and Sakurai, Shigeharu,3,669,797.
Izawa, Shin-ichi; Nakamura, Katsuyuki; and Mizoguchi, Yoshiyuki, to Asahikasei Kogyo Kabushiki Kaisha. Process for the preparation of 2,6-dialkyphenols. 3,670,033, Cl. 260-621.00r
J & T Engineers (Ascot) Limited: *See—*
Helyer, Lawrence Edward, 3,669,354.
Jackel, Simon S., to Wyandotte Chemicals Corporation. Bakes goods. 3,669,683, Cl. 99-91.000
Jacob, Charles Junior; and Lawton, Gerald Wayne, to RCA Corporation. Method of making electrical connections to a glass- encapsulated semiconductor device. 3,669,734, Cl. 117-217.
Jacob, Ezekiel J. Surgical blade package. 3,669,256, Cl. 206-63.20r

Jacobs, Willi F.; and Platzer, Maximilian F., to Lockheed Aircraft Corporation. Airfoil including fluidically controlled jet flap. 3,669,386, Cl. 244-52.000

Jacobsen Manufacturing Company: *See—*
Akgulian, Sahag C.; Haffner, Donald G.; and Heth, Sherman C., 3,668,844.

Jacquelin, Guy, to Centre Technique de l'Industrie des Papiers, Cartons et Celluloses. Method of and apparatus for continuous extraction of liquid from a pasty suspension. 3,669,011, Cl. 100-118.000

Jacura, Zenon: *See—*
Beinfest, Sidney; Jacura, Zenon; and Adams, Phillip,3,669,633.

Jaffe, Joseph; and Kittrell, James R., to Chevron Research Company. Hydrofining-hydrocracking process. 3,669,873, Cl. 208-59.000

Jager, Eugen, to Wolff Walsrode Aktiengesellschaft. Process for the continuous production of coated tubular structures. 3,669,721, Cl. 117-95.000

Jahn, Emil: *See—*
Weber, Rudolf; and Jahn, Emil,3,668,960.

Jakubaschk, Horst: *See—*
Thevis, Paul; Schneider, Adolf; and Jakubaschk, Horst,3,669,348.

Janicke, Joseph A. Package for a plurality of articles. 3,669,257, Cl. 206-65.000

Jansen, Francis J.: *See—*
Reynolds, Robert W.; Bibeau, James K.; and Jansen, Francis J.,3,669,072.

Jansen, Robert A., to Westinghouse Electric Corporation. Shelf and liner assembly. 3,669,520, Cl. 312-351.000

Jansen Th., G.m.b.H.: *See—*
Baum, Heinz, 3,669,405.

Japan Atomic Energy Research Institute: *See—*
Kondo, Tatsuo; Nakajima, Hajime; and Nagasaki, Ryukichi, 3,669,759.

Japan Synthetic Rubber Co., Ltd.: *See—*
Komatsu, Koei; Okuya, Eitaro; Tomioka, Katsuyoshi; Sakai, Masato; Hayashi, Shigeki; Yasunaga, Hidetoshi; and Kogure, Akira, 3,669,943.

Jarvis, Richard L.; and Kully, Walter, to American Aviation Corporation. Airplane tooling. 3,669,801, Cl. 156-383.000

Jarvis, Richard L.; and Kully, Walter, to American Aviation Corporation. Airplane tooling. 3,669,807, Cl. 156-581.000

Jarvis, Richard L.; and Kully, Walter. Airplane tooling. 3,669,811, Cl. 156-583.000

Jarvis, Richard L.; Kully, Walter; Calusen, Victor H.; Zweig, Arnold; and Engvoll, Sverre, to American Aviation Corporation Simpson Timber Company Arenco Aktiebolag. Airplane tooling Apparatus for bonding continuous flexible strands coated with a thermoplastic adhesive to the surface of moving veneer strips Device for folding onto, and joining with, one another two side edge portions of a heat sealing foil. 3,669,803, Cl. 156-567.000

Jaxheimer, William W.: *See—*
Misarek, Joseph; and Jaxheimer, William W.,3,668,839.

Jeanneret, Jules Louis. Stop mechanisms for lathes and other machine tools. 3,668,953, Cl. 82-22.000

Jena, Hans: *See—*
Umbach, Hans; and Jena, Hans,3,669,580.

Jenkins, Levaughn. Baby crib. 3,668,721, Cl. 5-109.000

Jensen, Arne, to Danfoss A/S. Speed and voltage control means for an alternating- current motor, particularly a polyphase induction motor. 3,670,224, Cl. 318-217.

Jensen, Harold R., to Western Electric Company, Incorporated. Pulse generator comprising serially connected make and break relays, timing circuit, flip-flop and monostable multivibrator. 3,670,209, Cl. 317-135.00r

Jephcott, William C.,: *See—*
Ratowsky, Simon, 3,668,997.

Jersey, Chester A.: *See—*
De Corso, Serafino M.; and Jersey, Chester A.,3,668,869.

Jezewski, Walter E.: *See—*
Biederman, Stuart J.; and Jezewski, Walter E.,3,668,760.

Joh. Kleinewefers Sohne: *See—*
Schlunke, Jurgen, 3,668,905.

Johannsen, Werner Hans: *See—*
Hofmann, Erich; Krull, Ernst; Johannsen, Werner Hans; Oberheim, Robert; and Scheibel, Josef,3,669,534.

Johns, Ira B., to Monsanto Research Corporation. (Aryloxyaryl) arylphosphorus compounds. 3,670,018, Cl. 260-545.00p

Johnsen, Leif: *See—*
Lindtveit, Torleif; Johnsen, Leif; and Haegland, Borge F.,3,668,778.

Johnson & Johnson: *See—*
Mesek, Frederick K., 3,668,925.

Johnson, A., & Company (London) Limited: *See—*
Burton, Derek Arthur, 3,669,869.

Johnson, Gordon L.; and Gannoe, Thomas E., to Sylvania Electric Products, Inc. Multiple contact electrical connector. 3,670,294, Cl. 339-195.00m

Johnson, Gordon P.: *See—*
Gerlach, Le Roy E.; Johnson, Gordon P.; and Tandeski, David A.,3,669,262.

Johnson, James C.; and Neider-Westermann, Winfried, to Westinghouse Electric Corporation. Air return scoop for air handling luminaires. 3,668,998, Cl. 98-40.0dl

Johnson, Keith O.; and Broadbent, Kent D., to MCA Technology, Inc. Electromagnetic transducer head having a bias frequency gap and an intelligence frequency gap. 3,670,114, Cl. 179-100.20c

Johnson, Kenneth R.: *See—*
Dietrich, Lee A.; Dikeman, John C.; and Johnson, Kenneth R.,3,669,631.

Johnson, Robert W.; and Porter, Robert B., to International Harvester Company. Single lever control for two lever fuel pump. 3,668,943, Cl. 74-471.00r

Johnson, Wayne B.: *See—*
Zellmer, Neale A.; and Johnson, Wayne B.,3,670,233.

Johnston, Alan R.: *See—*
United States of America,National Aeronautics and Space Administration, Administrator, 3,670,168.

Johnston, James D.: *See—*
Sanders, Robert N.; and Johnston, James D.,3,669,266.

Jones, Donald E., to Vann Industries, Inc. Tobacco heating and curing apparatus. 3,669,428, Cl. 263-19.00d

Jones, Doyle P.; Kohrn, Robert C.; and Perkins, Donald V., to Uniroyal, Inc. Mechanical and thermal damage protection and insulation materials usable therefor. 3,669,299, Cl. 220-10.

Jones, Duane A.; Fanta, George F.,; and Burr, Robert C., to United States of America, Agriculture. Flocculants from starch graft copolymers. 3,669,915, Cl. 260-17.4gc

Jones, James L., to United States of America, National Aeronautics and Space Administration. Stereoscopic television system and apparatus. 3,670,097, Cl. 178-6.500

Jones, Jerry J.; Keenon, Delbert L.; Morgan, William A.; and Lochridge, Joe C., to Brown & Root, Inc. Method and apparatus for laying pipelines. 3,668,878, Cl. 61-72.300

Jones, Malcolm D., to Kelsey-Hayes Company. Controller for a skid control system. 3,669,509, Cl. 303-21.00f

Jones, Michael Edward Benet: *See—*
Haggis, Geoffrey Arthur; Jones, Michael Edward Benet; and Knight, Michael Horace,3,669,920.

Jones, Wilford Donald; Baldino, James Peter; and Melamed, Sidney, to Rohm & Haas Company. Process of spinning a novel modacrylic fiber. 3,670,068, Cl. 264-182.000

Joseph, Charles W.: *See—*
Allman, William T., Jr.; Joseph, Charles W.; and Higgins, Ralph G., Jr.,3,669,788.

Josephart, David, 1/2 to Harris, Max. Lock for windows and doors. 3,668,906, Cl. 70-90.000

Joslyn Mfg. and Supply Company: *See—*
Luehring, Elmer L., 3,670,123.

Joy, Ivan L. Railway train fluid suspension. 3,669,028, Cl. 105-157.000

Joyce, James M., to International Business Machines Corporation. Pulse width modulated voltage regulator. 3,670,234, Cl. 321-18.000

Juda, Walter: *See—*
Novack, Robert L.; Moulton, David M.; and Juda, Walter,3,669,752.

Juda, Walter, to Prototech Incorporated. Fuel cell system. 3,669,750, Cl. 136-86.000

Juhl, William G.; and Libers, Roland, to Monsanto Company. Hydrogenation process. 3,670,041, Cl. 260-674.00h

Jung, Anton Ladislaus; and Ledwon, Erhard. Method of cleaning an oven with internal air circulation. 3,669,090, Cl. 126-21.

Jung, Joachim: *See—*
Schulze, Kurt-Jurgen; and Jung, Joachim,3,669,761.

Jupitor Corporation of Washington: *See—*
Nojima, Takeo, 3,669,515.

Jurgens, Adolph C. Irrigation apparatus. 3,669,355, Cl. 239-177.

Juzvuk, Diomid Ilich; and Saparov, Valentin Vasilievich. Granular ceramic heat carrier and method for manufacture thereof. 3,669,889, Cl. 252-71.000

Kabushiki Kaisha Kokuei Kikai Seisakusho: *See—*
Inoue, Komei; and Iguchi, Masayuki, 3,670,177.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Kado, Matayuki; and Mita, Masazo, 3,668,973.

Kabushiki Kaisha Meinan Seisakusho: *See—*
Hasegawa, Katsuji, 3,668,753.

Kabushiki Kaisha Ohara Kogaku Garasu Seizosho: *See—*
Suzuki, Ichizo; Yasui, Hideo; and Nanba, Kazuhiko, 3,669,696.

Kabushiki Kaisha Ricoh: *See—*
Kadowaki, Tatsusuke, 3,669,383.
Okuyama, Susumu, 3,669,539.

Kabushiki Kaisha Suwa Seikosha: *See—*
Hirabayashi, Masahide, 3,668,865.
Mitsui, Hiromitsu, 3,668,861.
Miyasaka, Mamoru, 3,668,863.
Miyasaka, Mamoru, 3,668,864.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Komatsu, Noboru; Suzuki, Takatoshi; Ito, Takuo; Hara, Yoshiteru; and Asakura, Kouichi, 3,668,917.

Kachi, Atsuyuki: *See—*
Konotsune, Shiro; Kachi, Atsuyuki; Tonoike, Takao; and Mori, Kinya,3,669,948.

Kado, Matayuki; and Mita, Masazo, to Kabushiki Kaisha Komatsu Seisakusho. Hydraulic oil winch. 3,668,973, Cl. 91-41.000

Kadowaki, Tatsusuke, to Kabushiki Kaisha Ricoh. Movie projector adapted to use both a film cartridge and an open reel. 3,669,383, Cl. 242-192.000

Kaganovsky, Frederik Isaakovich: *See—*
Budman, Moisei Izrailevich; Kaganovsky, Frederik Isaakovich; Kapitanov, Nikolai Ivanovich; Karzov, Jury Nikolaevich; Nadtochenko, Andrei Fedorovich; Slavetsky-Kotvitsky, Eduard Sebostyanovich; and Shorokhov, Leonid Pavlovich,3,668,921.

Kahn, Henry; and Hokama, Takeo, to Velsicol Chemical Corporation. Process for the production of alpha-methylstyrene polymer. 3,669,947, Cl. 260-93.50s

Kahn, Jay Dee C., to LTV Ling Altec, Inc. Speaker device for sound reproduction in liquid medium. 3,670,299, Cl. 340-8.00r

Kaiser Aluminum & Chemical Corporation: *See—*
Smith, Richard L., 3,669,855.

Kaiser, Friedrich, to Wyss, Escher Limited. Closure device on a pipe conduit. 3,669,404, Cl. 251-172.000

Kaiser Industries Corporation: *See—*
Young, Robert R., 3,669,288.

Kalfaian, Meguer V. Word and letter spacing arrangement for human-speech typewriters. 3,670,107, Cl. 179-1.0sa

Kalle Aktiengesellschaft: *See—*
Uhlig, Fritz; and Braun, Jurgen, 3,669,659.

Kallenowski, Peter: *See—*
Keller, Wilhelm; Kallenowski, Peter; and Schmidt, Peter,3,669,603.

Kallianides, Milton; and Klein, Gerhart P. Slot applicator means. 3,669,062, Cl. 118-9.000

Kalliomaki, Kalevi Juhani; Tiuri, Martti Eelis; and Vakkila, Seppo Matti, to Vaisala Oy. Electronic and automatic selector device connected to an antenna array formed by two or more antennas. 3,670,275, Cl. 325-370.000

Kamborian, Jacob S.; Typrowicz, Wladyslaw; and Anderson, Gordon S., said Typrowicz and said Anderson assors. to said Kamborian, Jacob S. Machine for disassembling a shoe from a last. 3,668,728, Cl. 12-15.100

Kameda, Nobuyuki: *See—*
Itaya, Nobushige; Kamoshita, Katsuzo; Mizutani, Toshio; Kitamura, Shigeyoshi; Nakai, Shinji; Kameda, Nobuyuki; Fujimoto, Keimei; and Okuno, Yositosi,3,669,989.

Kamegaya, Takeo; Imahori, Yutaka; Ohta, Akira; Kanoh, Tadao; and Ohara, Akio, to Nippon Hoso Kyokai, and Tokyo Shibaura Electric Co., Ltd. Metal vapour discharge lamp. 3,670,195, Cl. 313-217.000

Kaminow, Ivan Paul, to Bell Telephone Laboratories, Incorporated. Time division multiplex optical communication system. 3,670,166, Cl. 250-199.000

Kamise, Tadaoki: *See—*
Takeo, Keinosuke; Kosugi, Kazuo; and Kamise, Tadaoki,3,669,762.

Kammermayer, Wolfgang: *See—*
Marschall, Helmut; Kammermayer, Wolfgang; Beller, Hans Albert; Hahm, Heinz; and Belart, Juan,3,669,226.

Kamoshita, Katsuzo: *See—*
Itaya, Nobushige; Kamoshita, Katsuzo; Mizutani, Toshio; Kitamura, Shigeyoshi; Nakai, Shinji; Kameda, Nobuyuki; Fujimoto, Keimei; and Okuno, Yositosi,3,669,989.

Kanegafuchi Boseki Kabushiki Kaisha: *See—*
Ando, Satoshi; Tanaka, Yusaku; Kojima, Minoru; and Fujimura, Kyoichi, 3,669,917.

Kanegafuchi Chemical Industry Company Limited: *See—*
Saito, Kazuo; Tanaka, Takeshi; and Saito, Ichiro, 3,670,052.

Kanemitsu, Akio: *See—*
Hoshino, Kazuo; and Kanemitsu, Akio,3,669,689.

Kanij, Johannes B. W.; and Noothout, Arend J., to Reactor Centrum Nederland. Method for the preparation of spherical particles. 3,669,632, Cl. 23-245.000

Kanoh, Tadao: *See—*
Kamegaya, Takeo; Imahori, Yutaka; Ohta, Akira; Kanoh, Tadao; and Ohara, Akio,3,670,195.

Kantorski, Joseph W.; La Marre, David A.; and Smith, Donald A., to American Optical Corporation. Laser structure. 3,670,263, Cl. 331-94.500

Kapitanov, Nikolai Ivanovich: *See—*
Budman, Moisei Izrailevich; Kaganovsky, Frederik Isaakovich; Kapitanov, Nikolai Ivanovich; Karzov, Jury Nikolaevich; Nadtochenko, Andrei Fedorovich; Slavetsky-Kotvitsky, Eduard Sebostyanovich; and Shorokhov, Leonid Pavlovich,3,668,921.

Kaplowitz, Harry: *See—*
Bharwani, Bansi U.; and Kaplowitz, Harry,3,670,310.

Karlstrom, Karl R. M.: *See—*
Maase, Robert; and Karlstrom, Karl R. M.,3,669,027.

Karr, Melvin R.; and Hodge, Dean E., to Ralston Purina Company. Feed intake limiting composition for cattle. 3,669,676, Cl. 99-7.000

Kartasuk, Ray; and Gloridso, Ray, to Wilton Corporation. Quick engaging and disengaging nut mechanism. 3,669,440, Cl. 269-181.000

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Budman, Moisei Izrailevich; Kaganovsky, Frederik Isaakovich; Kapitanov, Nikolai Ivanovich; Karzov, Jury Nikolaevich; Nadtochenko, Andrei Fedorovich; Slavetsky-Kotvitsky, Eduard Sebostyanovich; and Shorokhov, Leonid Pavlovich,3,668,921.

Kasugai, Tsuneo; and Minagawa, Nobuhiko, to Fuji Photo Film Co., Ltd. Method of making a photographic base material. 3,669,709, Cl. 117-34.000

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Masayasu, Arikawa; Motomi, Kano; Katsuro, Iio; and Toshio, Tanaka,3,669,335.

Kaufman, Arthur L.: *See—*
Hyosaka, Alfred M.; Giebelhausen, Charles W.; and Kaufman, Arthur L.,3,669,535.

Kaufman, Harold B., Jr.; Schiffmann, Robert F.; and Stein, Ernest W., to DCA Food Industries, Inc. Environmental control system for microwave proofer. 3,670,132, Cl. 219-10.550

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Kawai, Kazuo: *See—*
Shintani, Sotokichi; Kawai, Kazuo; and Yanagidaira, Hidetaka,3,670,251.

Kawano, Suminori: *See—*
Tsuchiya, Hiroshi; Kunio, Nishinomiya-Shi; Kimura, Akio; Kawano, Suminori; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Okuno, Yositosi; Tanaka, Katsutoshi; Ooishi, Tadashi; and Takeda, Hisami,3,670,057.

Kawasumi, Shohachi: *See—*
Nakaguchi, Kohei; Nishikida, Tomozumi; Kawasumi, Shohachi; Maemoto, Kenichi; Sano, Takezo; Fujii, Yoshikazu; Harada, Koichi; and Ueda, Keijyu,3,669,945.

Kaye, Gordon E., to Mallory, P. R., & Co., Inc. Reserve cell, spring-controlled. 3,669,753, Cl. 136-114.000

Keeler, Larry G.: *See—*
Gentry, Charles B.; Scanlon, Robert M.; Rumery, Jerome; McDonald, Howard L.; and Keeler, Larry G.,3,668,910.

Keene Corporation: *See—*
Nogaj, Richard J., 3,669,422.

Keene, Joe P.: *See—*
Cash, John H., Jr.; and Keene, Joe P.,3,669,861.

Keeney, Bill R.: *See—*
Knox, John A.; Keeney, Bill R.; and Lasater, Reginald M.,3,669,613.

Keenon, Delbert L.: *See—*
Jones, Jerry J.; Keenon, Delbert L.; Morgan, William A.; and Lochridge, Joe C.,3,668,878.

Keller, Rudolf: *See—*
Wegmuller, Hans; Kleemann, Alois; and Keller, Rudolf,3,669,608.

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Kelly, Thomas Edward: *See—*
Murray, William Bruce; Kise, Mearl A.; and Kelly, Thomas Edward,3,669,616.

Kelsey-Hayes Company: *See—*
Jones, Malcolm D., 3,669,509.

Kemlage, Bernard M.: *See—*
Badami, Angelo V.; Ebert, Ekkehard,; Kemlage, Bernard M.; Kroeli, Karl E.; and Pogge, H. Bernhard,3,669,769.

Kemmetmueller, Roland, to American Waagner-Bero Company, Inc. Apparatus for preheating scrap. 3,669,436, Cl. 266-13.000

Kendall, Trevor William, to Dictaphone Corporation, mesne. Cassette hub leadering head. 3,668,759, Cl. 29-200.00b

Kennecott Copper Corporation: *See—*
Spedden, Henry R.; Apps, John A.; and Lowe, Donald F., 3,669,651.
Wang, Chih-Chung, 3,669,182.

Kenneryd, Karl Gosta Lennart: *See—*
Magnusson, Olov Tage; and Kenneryd, Karl Gosta Lennart,3,668,889.

Kent Instruments Limited: *See—*
Zanker, Klaus Joachim; and Harrison, Derrick Norman, 3,668,931.

Kern, Joerg: *See—*
Nachbur, Hermann; Kern, Joerg; and Maeder, Arthur,3,669,725.

Ketch, Frederick M.: *See—*
Shoaf, Myron D.; Ketch, Frederick M.; and Wong, Thomas S.,3,669,681.

Keto, August I., to Westinghouse Electric Corporation. Electrical connector assembly. 3,670,287, Cl. 339-12.00r

Ketterling, Edwin: *See—*
Ronayne, Ronald J.; and Ketterling, Edwin,3,669,229.

Kewanee Machinery & Conveyor Co.: *See—*
Cooper, Hugh; Whitehouse, Dale S.; and Womble, George E., 3,669,193.

Kewanee Oil Company: *See—*
Garvey, Bruce J., 3,669,851.

Key Research and Development Company: *See—*
Kincaid, Charles A., 3,668,966.

Keyl, Alex C.; and Brodie, Mary G., to Sherwin-Williams Company, The. High energy curing of photopolymerizable non-air inhibited polyester resin coatings. 3,669,716, Cl. 117-62.000

Khaja, Farees Uddin: *See—*
Nauheimer, Robert R.; and Khaja, Farees Uddin,3,669,694.

Khanchas, Vladislav Fedorovich: *See—*
Ivchenko, Georgy Semenovich; Berestovoi, Anatoly Mikhailovich; Khanchas, Vladislav Fedorovich; and Nikodimov, Anatoly Pavlovich,3,669,317.

Kida, Yoko: *See—*
Akamatsu, Akira; Togo, Kazushi; and Kida, Yoko,3,669,717.

Kidde, Walter & Company, Inc.: *See—*
Fleming, William T., 3,669,151.

Kikuchi, Junjiro: *See—*
Nozawa, Yoshikuni; Ishikawa, Mitsuo; and Kikuchi, Junjiro,3,669,457.

Kikuchi, Takeo; and Hashino, Hisaaki, to Sansui Electric Co., Ltd. Passive radiator for use in a bass-reflex loud-speaker system. 3,669,215, Cl. 181-32.00r

Kim, Sang-Chul, to General Electric Company. Simplified diode circuit for sequentially flashing photoflash lamps. 3,669,607, Cl. 431-95.

Kimberly-Clark Corporation: *See—*
Evans, Ernest C., 3,669,252.
Helminen, Toivo A., 3,668,771.
Schrading, Mark S.; and Winters, Terry L., 3,669,106.
Kimura, Akio: *See—*
Tsuchiya, Hiroshi; Kunio, Nishinomiya-Shi; Kimura, Akio; Kawano, Suminori; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Okuno, Yositosi; Tanaka, Katsutoshi; Ooishi, Tadashi; and Takeda, Hisami,3,670,057.
Kimura, Shiro; Kobayashi, Teruo; and Ishige, Sadao, to Fuji Photo Film Co., Ltd. Pressure sensitive copying sheet. 3,669,710, Cl. 117-36.200
Kimura, Shiro; Kobayashi, Teruo; Ishige, Sadao; and Kiritani, Masataka, to Fuji Photo Film Co., Ltd. Pressure-sensitive copying paper. 3,669,711, Cl. 117-36.200
Kimura, Shiro; Kobayashi, Teruo; Ishige, Sadao; and Kiritani, Masataka, to Fuji Photo Film Co., Ltd. Pressure-sensitive copying papers. 3,669,712, Cl. 117-36.200
Kimura, Yoshio: *See—*
Terasaki, Iwao; Kimura, Yoshio; Okamoto, Toshio; Shima, Tsukasa; Kohno, Mitsuo; and Kitamura, Kazuyuki,3,669,927.
Kincaid, Charles A., to Key Research and Development Company. Fastener for metal-wood structures. 3,668,966, Cl. 85-67.000
King, Henry L.; Ringwald, Eugene L.; and Randall, James C., Jr., to Monsanto Company. Thermally stable dyeable polyesters having improved dyed lightfastness. 3,669,925, Cl. 260-45.950
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King, Jane E.: *See—*
Fox, David J.; King, Jane E.; and Nardelli, Orazio J.,3,670,306.
King, Leonard Tony. Food heating device. 3,669,003, Cl. 99-331.000
King, William R. Constant flow pumping system. 3,669,572, Cl. 417-390.000
Kinney, Alfred W., to Phillips Petroleum Company. Folded, one-piece, liquid-tight tray and blank for forming same. 3,669,340, Cl. 229-31.
Kinney, Alfred W.; and Marshall, Frederick P., to Phillip Petroleum Company. Container and closure therefor. 3,669,305, Cl. 220-60.00r
Kinney, S. P., Engineers, Inc.: *See—*
Kinney, Selwyne P., 3,669,269.
Kinney, Selwyne P., to Kinney, S. P., Engineers, Inc. Industrial plant for recovering solids from liquids. 3,669,269, Cl. 210-122.000
Kino, Takayuki: *See—*
Sakomura, Toshio; Shimizu, Akihiko; Kino, Takayuki; and Kita, Atsushi,3,669,944.
Kinsel, Tracy Stewart, to Bell Telephone Laboratories, Incorporated. Optical time demultiplexer utilizing a single control pulse per frame. 3,670,165, Cl. 250-199.000
Kinsey, Robert E. Automatic disk cutter. 3,668,958, Cl. 83-88.000
Kiritani, Masataka: *See—*
Kimura, Shiro; Kobayashi, Teruo; Ishige, Sadao; and Kiritani, Masataka,3,669,711.
Kimura, Shiro; Kobayashi, Teruo; Ishige, Sadao; and Kiritani, Masataka,3,669,712.
Kirk, Colin John. Fluid actuated piston valve. 3,669,137, Cl. 137-119.000
Kirkham, Thomas A.; Arnold, John W.; and Giufrida, Anthony J., to Ionics Incorporated. Electrolytic chlorination and pH control of water. 3,669,857, Cl. 204-151.000
Kirton, Lionel A.: *See—*
Lenss, Andris; and Kirton, Lionel A.,3,669,431.
Kise, Mearl A.: *See—*
Murray, William Bruce; Kise, Mearl A.; and Kelly, Thomas Edward,3,669,616.
Kita, Atsushi: *See—*
Sakomura, Toshio; Shimizu, Akihiko; Kino, Takayuki; and Kita, Atsushi,3,669,944.
Kitamura, Kazuyuki: *See—*
Terasaki, Iwao; Kimura, Yoshio; Okamoto, Toshio; Shima, Tsukasa; Kohno, Mitsuo; and Kitamura, Kazuyuki,3,669,927.
Kitamura, Shigeyoshi: *See—*
Itaya, Nobushige; Kamoshita, Katsuzo; Mizutani, Toshio; Kitamura, Shigeyoshi; Nakai, Shinji; Kameda, Nobuyuki; Fujimoto, Keimei; and Okuno, Yositosi,3,669,989.
Kitaoka, Takashi; and Shirashoji, Akira, to Mitsubishi Denki Kabushiki Kaisha. System for braking electric motor vehicles. 3,670,225, Cl. 318-270.000
Kitta, Kenichi: *See—*
Kumada, Akio; Suzuki, Kenkichi; and Kitta, Kenichi,3,670,211.
Kittel, Hermann. Selective printer including settable resiliently driven type wheels. 3,669,016, Cl. 101-93.00c
Kittrell, James R.: *See—*
Jaffe, Joseph; and Kittrell, James R.,3,669,873.
Kitzmiller, Edward: *See—*
Hovnanian, Vram E.; and Kitzmiller, Edward,3,670,208.
Klaas, William: *See—*
Hokanson, Lyle W.; Savage, James R.; Smith, E. Peter; Levangie, Gilbert; and Klaas, William,3,669,196.
Klass, Donald L.; and Landahl, Carl D., to Institute of Gas Technology. Odorant replacement in gas streams. 3,669,637, Cl. 48-195.000
Klauke, Erich: *See—*
Bien, Hans-Samuel; and Klauke, Erich,3,669,951.
Kleemann, Alois: *See—*
Wegmuller, Hans; Kleemann, Alois; and Keller, Rudolf,3,669,608.
Klein, Donald L.; Mac Intyre, Michael W.; and Rothman, Lawrence J., to International Business Machines Corporation. Cyclic polyisoprene photoresist compositions. 3,669,669, Cl. 96-91.00n
Klein, Gerhart P.: *See—*
Kallianides, Milton; and Klein, Gerhart P.,3,669,062.
Klein, Robert J.: *See—*
Moehlman, Vernon C.; and Klein, Robert J.,3,669,023.
Kleiner, Willy. Device for the rinsing of body cavities. 3,669,101, Cl. 128-66.
Kleinman, Mitchel: *See—*
Lesk, Norman; and Kleinman, Mitchel,3,669,029.
Kleitman, David; Russell, Lewis K.; and Grebene, Alan B., to Signetics Corporation. Method for integrated circuit mask fabrication and assembly used therewith. 3,669,666, Cl. 96-41.000
Kletecka, George: *See—*
Smith, Peter D.; and Kletecka, George,3,669,962.
Klingspor, Richard; and Alebrant, John, to Esselte AB. Numbering mechanism for automatic printing of order numbers or the like in letters. 3,669,015, Cl. 101-76.
Klippan GmbH, Firma: *See—*
Ockel, Gustav, 3,668,747.
Kljuev, Mikhail Markovich: *See—*
Paton, Boris Evgenievich; Latash, Jury Vadimovich; Medovar, Boris Izrailevich; Emelianenko, July Georgievich; and Kljuev, Mikhail Markovich,3,670,089.
Klockner-Werke AG: *See—*
Geck, Gunter; and Langhammer, Hans Jurgen, 3,669,434.
Klor, Walter: *See—*
Braumann, Gundokar; Klor, Walter; and Huber, Albert,3,670,272.
Kloss, Alexandr Ilich: *See—*
Tsenter, Boris Ioselevich; Sergeev, Vyacheslav Mikhailovich; and Kloss, Alexandr Ilich,3,669,744.
Klotzbach, Kurt; and Herzog, Johann. Rolling apparatus for the rolling together of curved glass sheets with interposed plastics sheets to form a laminate. 3,669,808, Cl. 156-582.000
Klug, Sigmund L.; Finkel, Gilbert; and Sherain, Monroe B., to DCA Food Industries Inc. Composition for producing fried coated comestibles. 3,669,674, Cl. 99-1.000
Klumb, Ralph H., to Combustion Engineering, Inc. Core plug for nuclear reactor and method of operating reactor. 3,669,834, Cl. 176-87.000
Klumpp, Ferdninand, Jr., to Heyman Manufacturing Company. Electric contact blade crimp. 3,670,298, Cl. 339-276.00t
Knight, Basil Edward, to C.A.V. Limited. Fuel injection nozzles. 3,669,360, Cl. 239-533.000
Knight, Michael Horace: *See—*
Haggis, Geoffrey Arthur; Jones, Michael Edward Benet; and Knight, Michael Horace,3,669,920.
Knight, Warner P. Quick dump grass catcher for lawn mower. 3,668,846, Cl. 56-205.000
Knowlen, Robert B.: *See—*
Hardy, Richard W.; Knowlen, Robert B.; Sandifer, Cecil W.; and Plake, William C.,3,670,164.
Knowles, Richard N., to Du Pont de Nemours, E. I., and Company. Certain N-dihalo-acetylcyclohexylamines. 3,670,019, Cl. 260-561.0hl
Knowles, Terence J.; and Eaton, Daniel A., to Zenith Radio Corporation. Method and apparatus for applying a film to a substrate surface by diode sputtering. 3,669,860, Cl. 204-192.000
Knox, John A.; Keeney, Bill R.; and Lasater, Reginald M., to Halliburton Company. Method for inhibiting sulfide cracking of metals with a hydrogen sulfide-aldehyde reaction product. 3,669,613, Cl. 21-2.700
Ko, Yung Ling: *See—*
Ralston, Robert E.; and Ko, Yung Ling,3,669,754.
Kobayashi, Kazuhiko: *See—*
Saito, Nagao; and Kobayashi, Kazuhiko,3,670,136.
Kobayashi, Kesanao: *See—*
Yonezawa, Teruhiko; Kobayashi, Kesanao; and Kobayashi, Teruo,3,669,658.
Kobayashi, Tadashi. Method and apparatus for drying wavily-running strip with hot blasts. 3,668,788, Cl. 34-156.
Kobayashi, Teruo: *See—*
Kimura, Shiro; Kobayashi, Teruo; and Ishige, Sadao,3,669,710.
Kimura, Shiro; Kobayashi, Teruo; Ishige, Sadao; and Kiritani, Masataka,3,669,711.
Kimura, Shiro; Kobayashi, Teruo; Ishige, Sadao; and Kiritani, Masataka,3,669,712.
Yonezawa, Teruhiko; Kobayashi, Kesanao; and Kobayashi, Teruo,3,669,658.
Kobayashi, Tetsuji; Takayanagi, Seiichi; and Sugita, Tohru, to Tokyo Shibaura Electric Co., Ltd. Catheter-type semiconductor radiation detector for insertion into a human body. 3,669,095, Cl. 128-2.10r
Kobayashi, Tsuyoshi: *See—*
Okamoto, Tadashi; Kobayashi, Tsuyoshi; and Yamamoto, Hisao,3,669,960.
Kobayashi, Yugoro, to Ricoh Co., Ltd. Automatic copying and binding machine. 3,669,537, Cl. 355-50.000

Kobe Steel Ltd.: *See—*
Masayasu, Arikawa; Motomi, Kano; Katsuro, Iio; and Toshio, Tanaka, 3,669,335.

Koberstein, Edgar; and Lakatos, Eduard, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Catalyst for purification of exhaust gases from motor vehicles and industrial plants. 3,669,906, Cl. 252-465.000

Koch, George, Sons, Inc.: *See—*
Boost, Charles C.; Mitchell, William S.; and Horton, David M., 3,669,870.

Koehl, Harald: *See—*
Mueller, Herbert; Koehl, Harald; and Pommer, Horst,3,670,028.

Koehler, Albert M., to Brown & Root, Inc. Offshore tower apparatus and method. 3,668,876, Cl. 61-46.5

Koehler, William F.: *See—*
Cornell, Richard R.; and Koehler, William F.,3,669,338.

Koehring Company: *See—*
Brown, Gaylor W., 3,669,606.
Brown, Gaylord W.; Russell, Edward J.; Howe, Charles E.; and Schnepp, Bradley A., 3,669,594.
Brown, Gaylord W., 3,669,809.

Koester, Charles J.; and Swope, Charles Hermas, to American Optical Corporation. Controlled optical beam forming device. 3,670,260, Cl. 331-94.500

Koester, David W.: *See—*
Cornelius, Edward B.; and Koester, David W.,3,669,904.

Kogure, Akira: *See—*
Komatsu, Koei; Okuya, Eitaro; Tomioka, Katsuyoshi; Sakai, Masato; Hayashi, Shigeki; Yasunaga, Hidetoshi; and Kogure, Akira,3,669,943.

Kogure, Hiroshi: *See—*
Miyaki, Kiyoshi; and Kogure, Hiroshi,3,669,085.

Kohashi, Tadao; and Tanaka, Kazunobu, to Matsushita Electric Industrial Co., Ltd. Semiconductive elements. 3,669,907, Cl. 252-518.000

Kohl, Ralph A.: *See—*
Peiffer, Harold E.; and Kohl, Ralph A.,3,668,996.

Kohler, Gisbert, to SKF Kugellagerfabriken G.m.b.H. Footstep bearing. 3,669,518, Cl. 308-156.000

Kohno, Mitsuo: *See—*
Terasaki, Iwao; Kimura, Yoshio; Okamoto, Toshio; Shima, Tsukasa; Kohno, Mitsuo; and Kitamura, Kazuyuki,3,669,927.

Kohrn, Robert C.: *See—*
Jones, Doyle P.; Kohrn, Robert C.; and Perkins, Donald V.,3,669,299.

Kohut, Jaroslaw: *See—*
Graff, William A.; and Kohut, Jaroslaw,3,669,698.

Kojima, Minoru: *See—*
Ando, Satoshi; Tanaka, Yusaku; Kojima, Minoru; and Fujimura, Kyoichi,3,669,917.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Shintani, Sotokichi; Kawai, Kazuo; and Yanagidaira, Hidetaka, 3,670,251.

Koleske, Joseph Victor; Roberts, Rene Marie-Joseph; and Del-Giudice, Frank Paul, to Union Carbide Corporation. ABA block polymers of polylactones and polyethers. 3,670,045, Cl. 260-830.00r

Kolk, Stephen B.: *See—*
Semplonius, Frans; and Kolk, Stephen B.,3,669,499.

Kollsman Instrument Corporation: *See—*
Strauss, George M., 3,668,930.

Kolonel, Arthur. Two-speed golf mat. 3,669,454, Cl. 273-176.00f

Kolyer, John McNaughton; and Kveglis, Albert Andrew, to Allied Chemical Corporation. Solvent resistant polyethylene containers. 3,669,827, Cl. 161-227.000

Komatsu, Koei; Okuya, Eitaro; Tomioka, Katsuyoshi; Sakai, Masato; Hayashi, Shigeki; Yasunaga, Hidetoshi; and Kogure, Akira, to Japan Synthetic Rubber Co., Ltd. Process for producing conjugated diolefin polymer with reduced cold flow. 3,669,943, Cl. 260-80.700

Komatsu, Noboru; Suzuki, Takatoshi; Ito, Takuo; Hara, Yoshiteru; and Asakura, Kouichi, to Kabushiki Kaisha Toyota Chuo Kenkyusho, and Aisin Seiki Company Limited. Process and apparatus for press-forming and quenching a steel stock. 3,668,917, Cl. 72-342.

Komprimator AB: *See—*
Lundgren, Gunnar Arne Leonard, 3,669,010.

Kondo, Tamotu: *See—*
Usamoto, Teruyoshi; Yokota, Masao; and Kondo, Tamotu,3,669,828.

Kondo, Tatsuo; Nakajima, Hajime; and Nagasaki, Ryukichi, to Japan Atomic Energy Research Institute. Thermomechanical treatment for improving ductility of carbide-stabilized austenite stainless steel. 3,669,759, Cl. 148-12.300

Konecny, Charles R., to General Electric Company. Process for removing contaminants from zirconium surfaces. 3,669,758, Cl. 148-6.14

Konishiroku Photo Industry Co., Ltd.: *See—*
Iwama, Masakuni; Inoue, Isaburo; Hanzawa, Teruo; Sakamoti, Kenro; and Endo, Takaya, 3,669,671.

Konno, Tsuyoshi; Nakazato, Katsuo; and Ise, Satoshi, to Matsushita Electric Industrial Company, Limited. High-speed pulse delaying circuit. 3,670,182, Cl. 307-293.

Konorev, Mikhail Maximovich: *See—*
Filatov, Sergei Sergeevich; and Konorev, Mikhail Maximovich,3,669,630.

Konotsune, Shiro; Kachi, Atsuyuki; Tonoike, Takao; and Mori, Kinya, to Chisso Corporation. Method for producing poly α-olefins. 3,669,948, Cl. 260-93.700

Koppe, Volker: *See—*
Borck, Joachim; Dahm, Johann; Koppe, Volker; Kramer, Josef; Shorre, Gustav; Hovy, J. W. Hermann; and Schorscher, Ernst,3,669,956.
Borck, Joachim; Dahm, Johann; Koppe, Volker; Kramer, Josef; Schorre, Gustav; Hovy, Jan Willem; and Schorscher, Ernst,3,669,972.
Borck, Joachim; Dahm, Johann; Koppe, Volker; Kramer, Josef; Schoree, Gustav; Hovy, Jan Willem Herman; and Schorscher, Ernst,3,669,973.

Koppers Company, Inc.: *See—*
Nido, Jay, 3,668,957.

Korpel, Adrianus, to Zenith Radio Corporation. Optical scanning apparatus. 3,670,098, Cl. 178-6.000

Kosel, George E., to Hunt, Philip A., Chemical Corporation. Liquid developer for electrostatography. 3,669,886, Cl. 252-62.1

Kosugi, Kazuo: *See—*
Takeo, Keinosuke; Kosugi, Kazuo; and Kamise, Tadaoki,3,669,762.

Kotkins, Henry L., to Skyway Luggage Company. Luggage construction. 3,669,228, Cl. 190-41.00r

Kottmeier, Merrill F.: *See—*
Happ, George M.; and Kottmeier, Merrill F.,3,669,274.

Kourtoglou, George Chris: *See—*
Chrysanthis, Chris A.; and Kourtoglou, George Chris,3,669,254.

Koyanagi, Shunichi; Tajima, Shigenobu; Shimizu, Toshihide; and Kurimoto, Kazuhiko, to Shinetsu Chemical Company. Method for preparing polyvinyl chloride by suspension polymerization. 3,669,946, Cl. 260-92.800

Kraft, John H., to Sesame, John Kraft, Corporation. Food composition prepared from whey and comminuted sesame. 3,669,678, Cl. 99-28.000

Krall, Heribert; Maag, Helmut; Herrmann, Otto; and Posl, Rudolf, to Siemens Aktiengesellschaft. Drive system for continuous casting plants. 3,669,176, Cl. 164-4.000

Kramer, Josef: *See—*
Borck, Joachim; Dahm, Johann; Koppe, Volker; Kramer, Josef; Shorre, Gustav; Hovy, J. W. Hermann; and Schorscher, Ernst,3,669,956.
Borck, Joachim; Dahm, Johann; Koppe, Volker; Kramer, Josef; Schorre, Gustav; Hovy, Jan Willem; and Schorscher, Ernst,3,669,972.
Borck, Joachim; Dahm, Johann; Koppe, Volker; Kramer, Josef; Schoree, Gustav; Hovy, Jan Willem Herman; and Schorscher, Ernst,3,669,973.

Kramer, Rolf: *See—*
Lieber, Hans-Wilhelm; and Kramer, Rolf,3,669,868.

Kramer, Vance M. Apparatus for making flexible tubing with annular corrugations. 3,669,586, Cl. 425-109.

Kratt, Kurt, to Hengstler, J., K.G. Reset error detecting pulse counter. 3,670,152, Cl. 235-144.0hc

Kraus, Helmut; and Fadler, Kurt, to Fichtel & Sachs AG. Simultaneously or alternatively engaged fluid clutches. 3,669,233, Cl. 192-87.110

Kraus, Thaddaus: *See—*
Cremer, Erika; and Kraus, Thaddaus,3,669,881.

Kreuschmer, Rudolf. Device on cutting facilities for packing machines. 3,668,965, Cl. 83-476.000

Kreuzer, Hubert: *See—*
Berndt, Hans; and Kreuzer, Hubert,3,668,871.

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Krock, Richard H.: *See—*
Larsen, Earl I.; and Krock, Richard H.,3,668,755.

Kroell, Karl E.: *See—*
Badami, Angelo V.; Ebert, Ekkehard,; Kemlage, Bernard M.; Kroell, Karl E.; and Pogge, H. Bernhard,3,669,769.

Kroyer, Karl Kristian Kobs: *See—*
Rasmussen, Torben Borup, 3,669,778.

Krull, Ernst: *See—*
Hofmann, Erich; Krull, Ernst; Johannsen, Werner Hans; Oberheim, Robert; and Scheibel, Josef,3,669,534.

Krupp, Carroll P., to Goodrich, B. F., Company, The. Sealing closure. 3,668,745, Cl. 24-205.100

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Kuckens, Alexander. Liquid-dispensing apparatus having electromagnetically operated valve. 3,669,315, Cl. 222-148.000

Kuebler & Co., Firma: *See—*
Kuebler, Siegfried, 3,668,885.

Kuebler, Siegfried, to Kuebler & Co., Firma. Air cooled artificial ice rink. 3,668,885, Cl. 62-235.000

Kugellischer Georg Schafer & Co.: *See—*
Lang, Otto, 3,668,853.
Kuhn, Gustavo: *See—*
Polin, Herbert S.; and Kuhn, Gustavo,3,668,859.
Kully, Walter: *See—*
Jarvis, Richard L.; and Kully, Walter,3,669,801.
Jarvis, Richard L.; and Kully, Walter,3,669,807.
Jarvis, Richard L.; and Kully, Walter,3,669,811.
Jarvis, Richard L.; Kully, Walter; Calusen, Victor H.; Zweig, Arnold; and Engvoll, Sverre,3,669,803.
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Kun, Zoltan K.; and Robinson, Robert J., to Zenith Radio Corporation. P-N junctions in ZnSe, Zns, or ZnS/ZnSe and semiconductor devices comprising such junctions. 3,670,220, Cl. 317-237.
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Kunii, Kazushi: *See—*
Takamura, Akira; Kunii, Kazushi; Seharada, Saburo; and Nakatani, Hiroshi,3,669,222.
Kunik, I. Jordan: *See—*
Barzely, Avner, 3,670,254.
Kunio, Nishinomiya-Shi: *See—*
Tsuchiya, Hiroshi; Kunio, Nishinomiya-Shi; Kimura, Akio; Kawano, Suminori; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Okuno, Yositosi; Tanaka, Katsutoshi; Ooishi, Tadashi; and Takeda, Hisami,3,670,057.
Kuno, Mitsuzo: *See—*
Nakao, Yoshio; Kuno, Mitsuzo; Yamatodani, Saburo; Tanaka, Fumihiko; and Nojiri, Tsutomu,3,669,836.
Kurebayashi, Hidetoshi: *See—*
Nakahara, Shojiro; and Kurebayashi, Hidetoshi,3,670,267.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Munekata, Takashi; and Uchida, Eizaburo, 3,669,998.
Kurei, Hiroshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Device for viewing indicia. 3,668,993, Cl. 95-42.000
Kurimoto, Kazuhiko: *See—*
Koyanagi, Shunichi; Tajima, Shigenobu; Shimizu, Toshihide; and Kurimoto, Kazuhiko,3,669,946.
Kurita, Ken-Ichiro, to Kurita Machinery Manufacturing Company, Limited. Device for releasing filter cake in filter press. 3,669,273, Cl. 210-225.000
Kurita Machinery Manufacturing Company, Limited: *See—*
Kurita, Ken-Ichiro, 3,669,273.
Kuvshinov, Viktor Alexandrovich: *See—*
Voitsekhovsky, Bogdan Vyacheslavovich; Kuvshinov, Viktor Alexandrovich; Plaxin, Vladimir Nikolaevich; and Nevsky, Vyacheslav Alexandrovich,3,668,914.
Kveglis, Albert Andrew: *See—*
Kolyer, John McNaughton; and Kveglis, Albert Andrew,3,669,827.
Kwik Lok Corporation: *See—*
Holmes, Jack H., 3,668,818.
Kyowa Hakko Kogyo Co., Ltd.: *See—*
Hoshino, Kazuo; and Kanemitsu, Akio, 3,669,689.
Tanaka, Masao; Oka, Tetuo; Fujio, Tatsuro; and Mochizuki, Kazuo, 3,669,842.
Lab, Edgar: *See—*
Richter, Wolfgang Max Egon; Lab, Edgar; and Sieblist, Hans Werner,3,668,959.
LaBoda, Mitchell A., to General Motors Corporation. Electrochemical machining. 3,669,858, Cl. 204-143.
Lacey, Richard F.; Cutter, Leonard S.; and Turner Wilson S., to Hewlett-Packard Company. Atomic beam tube having a homogenious polarizing magnetic field in the RF transition region. 3,670,171, Cl. 250-41.300
Laible, Ralph L. Electrical fence construction. 3,669,413, Cl. 256-10.000
Lainesse, Bruno. Apparatus for injection molding. 3,669,601, Cl. 425-249.
L'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude and:*See—*
Goumy, Daniel, 3,670,093.
l'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude:*See—*
Thibault, Jean-Jacques; and Carle, Jacques, 3,668,881.
Lajus, Pierre, to Compagnie Generale de Radiologie. Radiological examination apparatus. 3,670,163, Cl. 250-50.000
Lakatos, Eduard: *See—*
Koberstein, Edgar; and Lakatos, Eduard,3,669,906.
La Marre, David A.: *See—*
Kantorski, Joseph W.; La Marre, David A.; and Smith, Donald A.,3,670,263.
Lamb-Weston, Inc.: *See—*
Schoch, Thomas J.; and Sloan, Jerry L., 3,669,686.
Lamparsky, Hans Dietmar; and Marbet, Roman, to Givaudan Corporation. Unsaturated hydroxy ketones. 3,670,026, Cl. 260-592.000
Lancor, Joseph H., Jr.: *See—*
Figge, Erwin E.; Lancor, Joseph H., Jr.; and Lodge, Edward H.,3,669,532.
Landahl, Carl D.: *See—*
Klass, Donald L.; and Landahl, Carl D.,3,669,637.
Landis, Donald E.; and Sidhu, Mohanjit S., to National Cash Register Company, The. Indexing mechanism. 3,668,942, Cl. 74-125.000
Landoni, Giannino. Multineedle quilting machine for the manufacture of padded upholstery. 3,669,045, Cl. 112-118.000
Landoni, Giannino. Cover material feeding and forming apparatus for a quilting machine. 3,669,324, Cl. 223-32.000
Lang, Otto, to Kugellischer Georg Schafer & Co. Friction crimping of synthetic threads. 3,668,853, Cl. 57-34.
Langhammer, Hans Jurgen: *See—*
Geck, Gunter; and Langhammer, Hans Jurgen,3,669,434.
Lardenois, Robert A. Hair brush. 3,668,732, Cl. 15-159.00a
Lare, Paul J.: *See—*
Divecha, Amarnath P.; Lare, Paul J.; Ordway, Fred, Jr.; Hermann, Robert A.; Van Blaricon, Orville B.; and Hahn, Henry,3,668,748.
Larew, John J.: *See—*
Dixon, Corbin; and Larew, John J.,3,670,205.
Larsen, Earl I.; and Krock, Richard H., to Mallory, P. R., & Co., Inc. Bonding of metallic members with lithium and lithium containing alloys. 3,668,755, Cl. 29-199.000
Larsen, Earl I.: *See—*
Krock, Richard H.; and Larsen, Earl I.,3,668,758.
Larson, James H., to Graco Inc. Pump. 3,669,516, Cl. 308-36.100
Larson, Melvin E., to Rospatch Corporation. Forward horizontal packer. 3,668,823, Cl. 53-250.000
LaSalle Machine Tool, Inc.: *See—*
Mitchell, Archibald S., 3,669,557.
Lasater, Reginald M.: *See—*
Knox, John A.; Keeney, Bill R.; and Lasater, Reginald M.,3,669,613.
Lasky, Daniel J.: *See—*
Faigenbaum, Mark A.; Lasky, Daniel J.; and Weisel, Harold C.,3,669,665.
Latash, Jury Vadimovich: *See—*
Paton, Boris Evgenievich; Latash, Jury Vadimovich; Medovar, Boris Izrailevich; Emelianenko, July Georgievich; and Kljuev, Mikhail Markovich,3,670,089.
Latham, Burton F., Jr.; and Crull, William B., to Continental Carbon Company. Burner and feedstock injection assembly for carbon black reactor. 3,669,628, Cl. 23-259.500
Launay, Pierre. Seal for the cover of a vessel with a circular opening. 3,669,303, Cl. 220-46.0ms
Laurentian Concentrates Limited: *See—*
Butler, James W., 3,669,898.
Lavinder, Taylor Franklin, to Du Pont de Nemours, E. I., and Company. Method. 3,668,948, Cl. 76-107.00s
Lawrence Brothers, Inc.: *See—*
Gehrke, Howard G., 3,669,395.
Lawrence, J. Richard: *See—*
Murphy, Peter C.; and Lawrence, J. Richard,3,669,656.
Lawrence, Richard E., deceased Lawrence, Eileen; executrix. Sectionalized stack with circumferential and radial expansion means. 3,669,042, Cl. 110-184.
Lawton, Gerald Wayne: *See—*
Jacob, Charles Junior; and Lawton, Gerald Wayne,3,669,734.
Lear Siegler, Inc.: *See—*
McGarvey, Charles E., 3,670,242.
Moses, Adrian J., 3,670,148.
Robinson, David S., 3,669,398.
Le Chatelier, Jacques, to Societe Alsacienne de Constructions Mecaniques de Mulhouse. Spinning frames. 3,668,854, Cl. 57-58.890
Ledebur, Harry C., to Wean Industries, Inc. Drawing of metal tubing. 3,668,916, Cl. 72-274.000
Ledwon, Erhard: *See—*
Jung, Anton Ladislaus; and Ledwon, Erhard,3,669,090.
Lee, Charles A.; and Furbeck, Warren E., to Appleton Wire Works Corporation, mesne. Method of making fabric with a filler of greater area than the fabric. 3,669,781, Cl. 156-84.
Lee, Charles A.: *See—*
Breslin, Mary Anne; Cogar, George R.; Lee, Charles A.; Neddenriep, Donald O.; Romeo, Albert J.; Sevilla, Ernesto G.; and Sekse, Torkjell,3,670,144.
Lee, Maurice Wm., Sr. Appliance for and method of pastry making. 3,669,006, Cl. 99-450.3
Lee, Raymond, Organization, The: *See—*
Romero, Addie B., 3,668,719.
Leeson, Richmond T.; and Richter, Hans H., to Leesona Corporation. Twister and method of twisting. 3,668,855, Cl. 57-77.400
Leesona Corporation: *See—*
Leeson, Richmond T.; and Richter, Hans H., 3,668,855.
Richter, Hans H., 3,668,856.
Leezer, James R.; Reid, Francis R.; Turpin, Charles H.; and Rejsa, Jack J., to Pillsbury Company, The. Quick opening container. 3,669,346, Cl. 229-51.0bp
Le Guillerm, Jacques: *See—*
Girard, Rene Fernand Victor; and Le Guillerm, Jacques,3,669,866.
Lehmkuhl, Robert, to Carlton Machine Tool Company, The. Automatic machining center. 3,669,556, Cl. 408-10.000
Lehovec, Krut; Hielscher, Frank H.; and Preier, Horst M., to Sprague Electric Company. Solid-state vidicon structure. 3,670,198, Cl. 315-11.000

Leibfried, Raymond T., to Hercules Incorporated. Synthesis of partial esters of certain poly(neopentyl polyols) and aliphatic monocarboxylic acids. 3,670,013, Cl. 260-488.00j

Lemaire, Irov P., to United States of America, Navy. Underwater imaging system for deep submergence vehicles. 3,668,986, Cl. 95-11.000

Leman, Marvin J., to Simpson Timber Company. Refuse burner for wood waste, bark residues, and other combustible solids. 3,669,039, Cl. 110-7.00a

Leman, Marvin J., to Simpson Timber Company. Penumatic spreader stoker. 3,669,502, Cl. 302-19.000

Le Mire, Noel, to Regie Nationale des Usines Renault, and Automobiles Peugeot. Vehicle seats. 3,669,397, Cl. 248-371.000

Lemo Limited: *See—*
Soussa, Elie Michel; and Habayeb, Jabbour, 3,669,126.

Lenss, Andris; and Kirton, Lionel A., to Signetics Corporation. Boat pulling apparatus and diffusion furnace and method. 3,669,431, Cl. 263-28.000

Lepselter, Martin Paul, to Bell Telephone Laboratories, Incorporated. Modifying barrier layer devices. 3,669,730, Cl. 117-200.000

Lerman, Frank: *See—*
Bartsch, Raymond C.; and Lerman, Frank,3,669,922.

Lerner, Martin L., to Zenith Radio Corporation. Process of etching a shadow mask. 3,669,771, Cl. 156-8.

Lesk, Norman; and Kleinman, Mitchel, to Treadwell Corporation. Rotatable hot metal discharging car. 3,669,029, Cl. 105-265.000

Le Tendre, Eugene F.: *See—*
Pagdin, William Gordon; Smith, Walter I.; Smith, Wayne A.; and Le Tendre, Eugene F.,3,669,244.

Levangie, Gilbert: *See—*
Hokanson, Lyle W.; Savage, James R.; Smith, E. Peter; Levangie, Gilbert; and Klaas, William,3,669,196.

Levensohn, David, to Continental Pet Innovations, Inc. Noiseless aquarium pump. 3,669,573, Cl. 417-416.000

Lever Brothers Company: *See—*
Greenwood, John Malcolm; and Stokes, David Howard, 3,669,891.
Priestley, Hill M.; and Wilson, James H., 3,670,027.

Levi, Clifford A., to Alpha Industries, Inc., mesne. Method of producing semiconductor devices. 3,669,773, Cl. 156-17.000

Levine, Ralph, to Cities Service Company. Storage stability of tetrakis nickel compounds. 3,669,999, Cl. 260-439.00r

Levy, Harold. Automobile hood lock device. 3,668,908, Cl. 70-240.000

Lewis, Elbert G. Fish cleaning trough for boats. 3,668,739, Cl. 17-53.000

Leyburn, Derek; Montague, Bernard R.; and Mattila, Henry K., to Bell Canada. Telephone translating apparatus. 3,670,109, Cl. 179-18.0et

Libers, Roland: *See—*
Juhl, William G.; and Libers, Roland,3,670,041.

Libu Shovel Co., A.G.: *See—*
Bergmann, Hermann Gustav Adolf, 3,669,481.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Mallebrein, Rainer, 3,670,322.
Rein, Hans-Martin; and Conze, Peter, 3,669,760.
Schmidt, Gunter-Karl, 3,669,381.

Lieber, Hans-Wilhelm; and Kramer, Rolf, to Fernsteuergerate Kurt Oelsch KG. Layer thickness indicating device for electrolytically deposited materials. 3,669,868, Cl. 204-228.000

Liermann, Charles J.; and Moore, Joseph G. Swimming pool cover and rescue device. 3,668,711, Cl. 4-172.130

Lignes Telegraphiques et Telephoniques: *See—*
De Meux, Patrick De Laage, 3,670,266.

Lilly, Eli, and Company: *See—*
Lunn, William H. W., 3,669,969.
Porter, Herschel D., 3,669,986.
White, William A., 3,669,965.

Lindner, Herbert, GmbH, Firma: *See—*
Stade, Gerhard, 3,669,088.

Lindsay, George F.; Sullivan, Shelby F.; and Whitehouse, Harper John, to United States of America, Navy. Correlators using shift registers. 3,670,151, Cl. 235-181.000

Lindtveit, Torleif; Johnsen, Leif; and Haegland, Borge F., deceased0 (by Haegland, Marit; legal representative). Methods for joining ends of wires and the like. 3,668,778, Cl. 29-630.

Linzmeier, Leonard J. Material cart. 3,669,464, Cl. 280-47.340

Lippitt, Raymond F.: *See—*
Hanson, Richard E.; and Lippitt, Raymond F.,3,669,353.

Lippmann, Wilbur, to Ayerst, McKenna and Harrison, Limited. Method of treating hyperchlorhydria and/or associated conditions. 3,670,088, Cl. 424-275.

Lipton, Thomas J., Inc.: *See—*
Gurkin, Martin; Sanderson, Gary Warner; and Studer, Victor Vernon, 3,669,680.

Little, Joseph P.; and Clouse, Jerry A., to Caterpillar Tractor Company. Fuel priming pump. 3,669,576, Cl. 417-571.000

Livingston, William L., to Factory Mutual Research Corporation. Method of fighting a fire. 3,669,191, Cl. 169-1.00a

Lleger, Alfred R.: *See—*
Gilvar, Martin; Conlon, Charles E.; and Lleger, Alfred R.,3,669,377.

Lochridge, Joe C.: *See—*
Jones, Jerry J.; Keenon, Delbert L.; Morgan, William A.; and Lochridge, Joe C.,3,668,878.

Lock, Michael Charles: *See—*
Mc Dougall, Ian Leitch; and Lock, Michael Charles,3,669,905.

Lockheed Aircraft Corporation: *See—*
Inoue, Kiyoshi, 3,670,137.
Jacobs, Willi F.; and Platzer, Maximilian F., 3,669,386.

Locking Systems, Inc.: *See—*
Roberts, Marvin E., 3,668,909.

Lodge, Edward H.: *See—*
Figge, Erwin E.; Lancor, Joseph H., Jr.; and Lodge, Edward H.,3,669,532.

Lodge, Frank: *See—*
Harvey, Edwin Dennis; and Lodge, Frank,3,669,994.

Logemann, Willy: *See—*
Ambrogi, Vittorio; and Logemann, Willy,3,669,966.

Logic Dynamics, Inc.: *See—*
Hovnanian, Vram E.; and Kitzmiller, Edward, 3,670,208.

Lohmann & Stolterfoht Aktiengesellschaft: *See—*
Burkhardt, Walter; and Wedler, Herbert, 3,669,230.

Lohmeyer, Hartmut H. Modular furniture pieces. 3,669,494, Cl. 297-440.000

Lomas, Eric Ellis, to Fibreglass Limited. Chopper body. 3,668,964, Cl. 83-347.

Longi, Paolo: *See—*
Cameli, Nazzareno; Longi, Paolo; Valvassori, Alberto; and Flisi, Umberto,3,670,055.

L'Oreal:*See—*
Morane, Bruno P., 3,669,114.

Lorenz, Dietrich: *See—*
Boltze, Karl-Heinz; and Lorenz, Dietrich,3,669,967.

Lorenz, Gunter; Gallus, Manfred; Giessler, Wolfgang; and Nischk, Gunther, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of high molecular weight polybenzoxazinones. 3,669,928, Cl. 260-47.0cp

Lorenzetti, Olfeo John, to Miles Laboratories, Inc. Method of lowering intraocular pressure. 3,670,087, Cl. 424-273.000

Loscalzo, Nicholas R., to Petcraft Industries Incorporated. Grooming and cleaning device. 3,668,736, Cl. 15-402.000

Loturco, Joseph A. Toroidal coil winding machine. 3,669,365, Cl. 242-4.00b

Loucks, Wynn R. Snap-on bracket. 3,669,394, Cl. 248-221.000

Loudenslager, Ray D., to Automotive Exhaust Control Corporation. Auxiliary air fuel mixture control system for reducing automotive exhaust emissions. 3,669,420, Cl. 261-23.00a

Love, Gordon D. Mixing apparatus. 3,669,414, Cl. 259-8.000

Lowe,Charles B., to Universal Oil Products Company. Vehicle seats. 3,669,400, Cl. 248-400.000

Lowe, Donald F.: *See—*
Spedden, Henry R.; Apps, John A.; and Lowe, Donald F.,3,669,651.

Lowicki, Norbert; and Teggers, Hans, to Grillo-Werke Aktiengesellschaft. Process for the directive removal of SO3 from waste gas. 3,669,617, Cl. 23-25.000

LTV Aerospace Corporation: *See—*
Trim, James H., 3,670,244.

LTV Ling Altec, Inc.: *See—*
Kahn, Jay Dee C., 3,670,299.
Theodore, Charles, 3,670,232.
Theodore, Charles, 3,670,276.

Lubliner, Milton, to White, Morris, Fashions, Inc. Ladies handbag. 3,669,169, Cl. 150-33.000

Lucas, Joseph, (Industries) Limited: *See—*
Cryer, Edward, 3,670,116.
Harris, Paul Anthony, 3,670,229.
Savory, Anthony James, 3,669,596.
Stowe, Brian, 3,670,118.

Lucas, Raymond L. R. System for controlling application of braking force to a roll of sheet material. 3,669,376, Cl. 242-75.450

Lucien, Rene, to Societe Messier. Control device for aircraft undercarriages and trap-door housing closure. 3,669,387, Cl. 244-102.0sl

Luckenbill, Lawrence F.; and Hackman, Frank C., to Mueller Co. Compression couplings. 3,669,475, Cl. 285-348.000

Lucy, Carl F.: *See—*
Waite, Hal R.; and Lucy, Carl F.,3,669,020.

Luecke, Fred R., Jr.: *See—*
Freerks, Conrad T.; and Luecke, Fred R., Jr.,3,668,814.

Luehring, Elmer L., to Joslyn Mfg. and Supply Company. Multi-point to common point dead tank switch having vacuum insulated contacts and vacuum insulated terminals. 3,670,123, Cl. 200-144.00b

Lund, Bjorn: *See—*
Gude, Klaus Erik; and Lund, Bjorn,3,669,432.

Lund, Herbert Z. Alcoholic concentration indicator. 3,668,866, Cl. 58-152.00r

Lundgren, Gunnar Arne Leonard, to Komprimator AB. Garbage compactors. 3,669,010, Cl. 100-52.

Lundovist, Bertil: *See—*
Zinck, Petersen, Jorgen; and Lundovist, Bertil,3,670,175.

Lunn, William H. W., to Lilly, Eli, and Company. Benzimidazo[2,1-b]quinazolin-12(6H) ones. 3,669,969, Cl. 260-256.40f

Lurie, Michael Jay: *See—*
Sen Ih, Charles Chung; and Lurie, Michael Jay,3,669,673.

Lutz, Albert William; and Feeny, Richard William, to American Cyanamid Company. 3,5,6-Substituted -6-(trifluoromethyl) hydrouracils. 3,669,970, Cl. 260-260.000

Lutz, Charles William, to FMC Corporation. Refrigerated dough compositions and process for preparing same. 3,669,682, Cl. 99-90.0nf

Lyman, Eugene S.: *See—*
Smith, Ernset L.; Duffy, Arthur R.; and Lyman, Eugene S.,3,669,816.

Lyons, John W.: *See—*
Clarke, Fredric B.; and Lyons, John W.,3,669,893.

M & J Valve Company: *See—*
Grove, Marvin H.; and Van Arsdale, Lyle R., 3,668,923.

M & T Chemicals Inc.: *See—*
Eppensteiner, Frederick Walter, 3,669,776.
Harbulak, Edward P., 3,669,854.

Maag, Helmut: *See—*
Krall, Heribert; Maag, Helmut; Herrmann, Otto; and Posl, Rudolf,3,669,176.

Maase, Robert; and Karlstrom, Karl R. M., to American Chain & Cable Company, Inc. Tow truck conveyor system. 3,669,027, Cl. 104-172.0bt

MacCormac, James Kenneth Maxwell: *See—*
Parkman, William Terence; and MacCormac, James Kenneth Maxwell,3,670,149.

Mac Intyre, Michael W.: *See—*
Klein, Donald L.; Mac Intyre, Michael W.; and Rothman, Lawrence J.,3,669,669.

Mack, James M.: *See—*
Podiak, Richard S.; Mack, James M.; and Bretsch, Michael A.,3,668,749.

Mackenzie, Gordon C.: *See—*
Rattman, William J.; Wasson, Frank R., Jr.; and Mackenzie, Gordon C.,3,669,540.

MacKenzie, Joseph H., Jr. Wire termination block construction. 3,670,296, Cl. 339-198.00g

Mac Millan Bloedel Limited: *See—*
Admiraal, Lambertus, 3,670,133.

Maddick, George Albert Farquhar. Apparatus for monitoring flow of current in a conductor. 3,670,231, Cl. 321-12.

Mador, Irving L.: *See—*
Goetz, Richard W.; and Mador, Irving L.,3,670,021.

Maeder, Arthur: *See—*
Nachbur, Hermann; Kern, Joerg; and Maeder, Arthur,3,669,725.

Maemoto, Kenichi: *See—*
Nakaguchi, Kohei; Nishikida, Tomozumi; Kawasumi, Shohachi; Maemoto, Kenichi; Sano, Takezo; Fujii, Yoshikazu; Harada, Koichi; and Ueda, Keijyu,3,669,945.

Magat, Eugene Edward; and Tanner, David, to Du Pont de Nemours, E. I., and Company. Graft copolymers of unsaturated polyethers on polyamide and polyester substrates. 3,670,048, Cl. 260-857.00g

Mager, Elisabeth; Schulz, Helga; and Schulz, Peter, to Plaat, Carl, Firma. One-piece nipple, pacifier and the like. 3,669,112, Cl. 128-252.

Magnante, Peter C., to American Optical Corporation. Frequency-doubled neodymium doped glass laser utilizing a lithium niobate crystal. 3,670,258, Cl. 331-94.500

Magnuson, Genevieve I.: *See—*
Babb, Raymond E., 3,669,263.

Magnuson, Robert,: *See—*
Babb, Raymond E., 3,669,263.

Magnusson, Olov Tage; and Kenneryd, Karl Gosta Lennart, to Aktiebolaget Electrolux. Gas-operated refrigerator having sealed combustion system. 3,668,889, Cl. 62-476.000

MAGRINI Fabbriche Riunite Magrini-Scarpa e Magnano M.S.M., S.p.A.: *See—*
Calvino y Teijeiro, Benito Jose, 3,670,124.

MAGRINI Fabbriche Ruinite Magrini-Scarpa e Magnano M.S.M., S.p.A.: *See—*
Calvino y Teijeiro, Benito Jose, 3,670,125.

Mahler, Jorn Leo: *See—*
Aunstrup, Knud; and Mahler, Jorn Leo,3,669,843.

Maier, Andreas: *See—*
Sutter, Fritz; and Maier, Andreas,3,669,416.

Maisch, Larry D.: *See—*
Bryan, Darrel L.; and Maisch, Larry D.,3,669,293.

Major Corporation: *See—*
Yancey, Le Roy D., 3,670,117.

Malis, Albert. Chord indicator. 3,668,967, Cl. 84-471.000

Mallams, Alan K., to Schering Corporation. 9-Dihydromegalalosamine and esters thereof and methods for their manufacture. 3,669,952, Cl. 260-210.0ab

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Mallory, P. R., & Co. Inc.: *See—*
Anderson, Daniel J., 3,670,212.
Kaye, Gordon E., 3,669,753.
Larsen, Earl I.; and Krock, Richard H., 3,668,755.
Murphy, Peter C.; and Lawrence, J. Richard, 3,669,656.
Ralston, Robert E.; and Ko, Yung Ling, 3,669,754.

Maloney, William T., to Sperry Rand Corporation. Lensless optical recognition system. 3,670,305, Cl. 340-146.30p

Mamrose, Wesley. Dishwashing apparatus. 3,669,132, Cl. 134-58.00d

Manatt, Stanley L.: *See—*
United States of America,National Aeronautics and Space Administration, Administrator, 3,670,241.

Mangen, Arnold: *See—*
Eriksson, Karl Gunnar; and Mangen, Arnold,3,670,065.

Mannesman Aktiengesellschaft: *See—*
Sander, Otto; and Ulpe, Alexander, 3,668,875.

Mannesmann Aktiengesellschaft: *See—*
Schrewe, Hans, 3,669,181.

Mannesmann-Meer Aktiengesellschaft: *See—*
Himmler, Conrad Richard, 3,669,570.

Mannion, Gerald F.; and Mannion, James R. Flow resistance equalizer for liquid circulation system. 3,668,822, Cl. 55-159.000

Mannion, James R.: *See—*
Mannion, Gerald F.; and Mannion, James R.,3,668,822.

Mansfeld, Viktor; and Padr, Zdenek, to Spofa, United Pharmaceutical Works. Process of preparing a protease inhibitor. 3,670,075, Cl. 424-110.000

Manus, George: *See—*
Andersen, Bjorn, 3,670,108.

Manus, Max: *See—*
Andersen, Bjorn, 3,670,108.

Manzek, Rhinehart A.: *See—*
Turner, Lyman H.; and Manzek, Rhinehart A.,3,669,447.

MAR-PHA, Societe d'Etude et d'Exploitation de Marques:*See—*
Cahn, Jean, 3,670,081.

Maranchak, Vasily Makarovich; Novella, Vladimir Nikolaevich; and Veisky, Stanislav Petrovich. Method for determining the distance to a fault on power transmission lines and device for its realization on D.C. lines. 3,670,240, Cl. 324-52.

Marand, Jean; and Rousselot, Felix, to Ciba-Geigy Corporation. Aerosol dispenser having flexible collapsible product containing sac. 3,669,313, Cl. 222-95.000

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Marbelite Company, Inc.: *See—*
Siklos, Gregory,; and Rudden, James B., 3,670,302.

Marbet, Roman: *See—*
Lamparsky, Hans Dietmar; and Marbet, Roman,3,670,026.

Mardon, Austin; and Nielsen, Robert N., Jr., to American Nucleonics Corporation. Tunnel diode movement detector. 3,670,328, Cl. 343-8.

Maretka, Faye M. Pocket organizer for golfers. 3,669,250, Cl. 206-38.00r

Marez, John; and Hatch, Alan R., to United States of America, Navy. Film insertion and removal device for use with a cathode ray tube. 3,670,102, Cl. 178-7.800

Marforio, Nerino, to Virginio Rimoldi & Co., S.p.A. Presser foot deflecter of a fabric edge in a sewing machine. 3,669,049, Cl. 112-150.000

Markarian, Mark, to Sprague Electric Company. Molded cover and vent for electrolytic capacitors. 3,669,302, Cl. 220-44.00r

Markin, Joseph: *See—*
Sobel, Alan; and Markin, Joseph,3,670,323.

Marquardt, Julius F.; and Wade, Ronald A., to International Harvester Company. Change-speed reduction drive for a conveyor. 3,668,794, Cl. 37-8.000

Marriott, Eric Walter, to Cotton, William Limited. Straight bar knitting machines. 3,668,903, Cl. 66-82.000

Marschak, Howard J. Shelf detachably secured to an apertured board to form a display unit. 3,669,034, Cl. 108-152.000

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Marschall, Helmut; Kammermayer, Wolfgang; Beller, Hans Albert; Hahm, Heinz; and Belart, Juan, to Teves, Alfred, G.m.b.H. Piston assembly for dual-network disk-brake system. 3,669,226, Cl. 188-345.

Marsh, Albert F. Automatic egg turner for incubator. 3,669,075, Cl. 119-44.000

Marsh, Stanley Bruce: *See—*
Clare, John Dickens; and Marsh, Stanley Bruce,3,670,327.

Marshall, Frederick P.: *See—*
Kinney, Alfred W.; and Marshall, Frederick P.,3,669,305.

Marshall, Ted R.: *See—*
De Core, Fred; Peake, Thaddeus A.; and Marshall, Ted R.,3,668,768.

Marteel, Bernard: *See—*
De Boeck, Paul; Marteel, Bernard; and Schrijvers, Jozef,3,669,833.

Martin Marietta Corporation: *See—*
Gille, John P., 3,668,880.

Martin, Ronald C.; and Sixt, Marty E., to Advance Drainage Systems, Inc. Flexible coupling. 3,669,473, Cl. 285-197.000

Martin, Walter Harper, to Refrigeration Engineering Corporation. Method and means for unloading articles from a conveyor. 3,669,239, Cl. 198-25.000

Martineck, Hans G.: *See—*
Angele Wilhelm; and Martineck, Hans G.,3,670,290.

Martini Buchbindereimaschinenfabrik AG: *See—*
Risi, Walter, 3,669,246.

Mas, Ernst: *See—*
Munzing, Robert, 3,670,115.

Masayasu, Arikawa; Motomi, Kano; Katsuro, Iio; and Toshio, Tanaka, to Kobe Steel Ltd. Backing strip for single side welding of steels. 3,669,335, Cl. 228-50.000

Maschinenfabrik Goebel GmbH: *See—*
Emich, Georg Konrad, 3,669,369.

Mascia, Carmen T., to Continental Can Company, Inc. Carrier-opener combination. 3,669,258, Cl. 206-65.00c

Masiuk, Alphonse M.: *See—*
Tobey, Hubert E.; Masiuk, Alphonse M.; Hood, John W.; and Irvin, Dee L.,3,669,165.

Mason, John W. Portable and adjustable miniature basketball goal. 3,669,450, Cl. 273-1.50r

Mason, Peter Arthur, to International Standard Electric Corporation. Tape tension control apparatus. 3,669,370, Cl. 242-75.450

Massonnet, Henry. Chairs. 3,669,497, Cl. 297-445.

Massoubre, Jean-Marie, to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie. Acceleration of sulfur vulcanization of polyurethanes. 3,669,932, Cl. 260-75.0nc

Masubuchi, Yoshinori: *See—*
Mitsukawa, Konosuke; Hattori, Hiroshi; Hikoda, Toyohiko; and Masubuchi, Yoshinori,3,669,792.

Masuoka, Sadao: *See—*
Morita, Minoru; Shiraki, Takashi; and Masuoka, Sadao,3,668,775.

Masuyama, Takeshi: *See—*
Hamamoto, Kazuo; Matsuoka, Michio; and Masuyama, Takeshi,3,670,221.

Masuyama, Takeshi; Amemiya, Toshioki; and Iida, Yoshio, to Matsushita Electric Industrial Co., Ltd. Voltage variable resistors. 3,670,216, Cl. 317-238.

Mathers Controls, Inc.: *See—*
Mathers, Harold M., 3,669,234.

Mathers, Harold M., to Mathers Controls, Inc. Fluid controls for engine and forward-reverse transmission. 3,669,234, Cl. 192-0.098

Mathevosian, Yervand, to Baldwin, D. H., Company. Analog to digital encoder. 3,670,325, Cl. 340-347.

Mathews, James R.: *See—*
Beadle, William E.; Benson, Kenneth E.; Mathews, James R.; and Von Ohlsen, Louis H., Jr.,3,669,768.

Matsuoka, Michio: *See—*
Hamamoto, Kazuo; Matsuoka, Michio; and Masuyama, Takeshi,3,670,221.

Matsushita Electric Industrial Co., Ltd.: *See—*
Hamamoto, Kazuo; Matsuoka, Michio; and Masuyama, Takeshi, 3,670,221.
Hirata, Hiroshi; and Arai, Masanao, 3,669,862.
Kohashi, Tadao; and Tanaka, Kazunobu, 3,669,907.
Masuyama, Takeshi; Amemiya, Toshioki; and Iida, Yoshio, 3,670,216.
Morita, Minoru; Shiraki, Takashi; and Masuoka, Sadao, 3,668,775.
Nishida, Masamitsu; and Ouchi, Hiromu, 3,669,887.
Yoshii, Tetsuji, 3,668,894.

Matsushita Electric Industrial Company, Limited: *See—*
Konno, Tsuyoshi; Nakazato, Katsuo; and Ise, Satoshi, 3,670,182.

Matsushita Electric Works, Ltd.: *See—*
Doi, Kazuo; Nakajima, Jun; Takahashi, Hisamitsu; and Tomokawa, Hideo, 3,669,699.

Matsushita Electronics Corporation: *See—*
Wakai, Shuzo, 3,670,264.

Matsuura, Hideo; Imagawa, Katsuhiko; and Murase, Yoshihiko, to Nippon Gakki Seizo Kabushiki Kaisha. Vibrating plate for sound instrument. 3,669,214, Cl. 181-32.

Matthews, Richard D.; Halfhill, Martin O.; Sordello, Frank J.; and Yang, Harold S., to Information Storage Systems, Inc. Control for disc drive apparatus. 3,670,316, Cl. 340-174.10c

Mattila, Henry K.: *See—*
Leyburn, Derek; Montague, Bernard R.; and Mattila, Henry K.,3,670,109.

Mattison, Norbert A. Highway cleaner. 3,669,289, Cl. 214-353.000

Mattson, William R., to Sylvania Electric Products, Inc. Strain relief wire holder. 3,670,094, Cl. 174-65.00r

Maurer, Robert F.; Mc Vay, Robert D.; and Hummel, Donald L., to United McGill Corporation. Mold press for tire curing apparatus. 3,669,581, Cl. 425-34.000

Mauthner, Thomas, to Cambridge Chemical Products, Inc. Hematological stain system. 3,670,072, Cl. 424-3.000

Maxwell, Richard R.: *See—*
Stevens, John M.; and Maxwell, Richard R.,3,670,170.

Mayashibara Company: *See—*
Suzuki, Yukio, 3,669,835.

Mayer, Walter: *See—*
Hoelzinger, Walther J.; Wenninger, Johann; Mayer, Walter; Zoegernitz, Karl; Schroetter, Hermann; and Braun, Werner,3,669,064.

Mazur, Conrad F., to Standard Oil Company. Extrusion coating of a heat fusible foam sheet. 3,669,794, Cl. 156-244.

Mazza, Lamberto, to Industrie A. Zanussi S.p.A. Device for the controlled actuation of the basket or a washing machine. 3,670,226, Cl. 318-345.

Mazzoni, Renato J.: *See—*
Bowser, George H.; Shoop, Vernon A.; Pyzewski, Stanley J.; Mazzoni, Renato J.; and Bologna, John P.,3,669,785.

MCA Technology, Inc.: *See—*
Johnson, Keith O.; and Broadbent, Kent D., 3,670,114.

McAllister, Lewis L.; and Popek, Wencil D., to Collins Radio Company. Automatic processing equipment for microelectronic circuits. 3,668,750, Cl. 29-33.00m

McBride, Herbert J. Paint brush holder. 3,668,731, Cl. 15-146.000

McCann, Thomas A. Machine for lasting shoes. 3,668,727, Cl. 12-15.

McCarthy, Charles D.: *See—*
Foley, Charles F.; and McCarthy, Charles D.,3,669,452.

McCarthy, John J.: *See—*
Desmond, Richard J.; Fronxzek, Edward J.; and McCarthy, John J.,3,669,478.

McCarty, Horace G.: *See—*
Rowland-Hill, Edward William; and McCarty, Horace G.,3,669,125.

McClelland, Donald H.: *See—*
Devitt, John L.; and McClelland, Donald H.,3,669,746.

McComas, Jean W.: *See—*
Glantz, Earl; and McComas, Jean W.,3,669,385.

McCone, Alan, Jr.: *See—*
Camp, Albert T.; and McCone, Alan, Jr.,3,668,872.

McCullough, William N.; and Spracklen, Edwin E., deceased Spracklen, Dorothy H.; legal representative, said McCullough assor. to Eagle-Picher Industries, Inc. Thermal battery. 3,669,748, Cl. 136-83.00t

McDevitt, James G. Reversible flooring. 3,669,817, Cl. 161-44.000

McDonald, Howard L.: *See—*
Gentry, Charles B.; Scanlon, Robert M.; Rumery, Jerome; McDonald, Howard L.; and Keeler, Larry G.,3,668,910.

McDonough, James O.: *See—*
Grossimon, Herbert P.; McDonough, James O.; and Roberge, James K.,3,670,180.

Mc Dougall, Ian Leitch; and Lock, Michael Charles, to Imperial Metal Industries (Kynoch) Limited. Electrical conductors. 3,669,905, Cl. 252-512.000

McGarvey, Charles E., to Lear Siegler, Inc. Selective paging receiver and decoder employing an electronic filter means. 3,670,242, Cl. 325-55.

McGivern, Robert F. Siphon type sludge removal system for a sewage settling tank. 3,669,271, Cl. 210-128.000

McGrath, Paul F.: *See—*
Spaw, Eugene S.; McGrath, Paul F.; and Otto, Stanley W.,3,669,014.

McIlvaine, Robert W., to National Dust Collector Corporation. Method and apparatus for determining the difficulty of removing pollutants by wet scrubbing action. 3,668,825, Cl. 55-21.000

Mc Kendrick, Lorne J. Load balancer. 3,669,411, Cl. 254-168.

Mc Larty, Jack Lowrie, to Universal Oil Products Company. Method for compensating for resin shrinkage in the production of a filament wound article. 3,669,782, Cl. 156-84.000

McLean, George F., Jr., to USM Corporation. Molding machinery. 3,669,600, Cl. 425-245.000

McLeod, Donald Patterson, to Dowty Technical Developments Limited. Pump. 3,669,568, Cl. 417-203.

McMahan, William H., to Control Laser-Orlando, Inc. Method of forming a laser tube. 3,668,777, Cl. 29-628.

McMahan, William H., to Control Laser-Orlando, Inc. Laser guide construction. 3,670,256, Cl. 331-94.500

McMahan, William H., to Control Laser-Orlando, Inc. Method of gas ion laser action. 3,670,257, Cl. 331-94.500

McMullen, James Michael: *See—*
Fleming, John W., Jr.; and McMullen, James Michael,3,668,922.

McMurray, James A., to Electronic Associates, Inc. Parallel digital differential anaylzer. 3,670,154, Cl. 235-152.000

McNally, John M.; and Molette, Albert H., Jr., to Westinghouse Electric Corporation. Extraction turbine with a servo actuated balanced grid valve for extraction control. 3,669,562, Cl. 415-159.000

McNeil, Dalph C.; and McNeil, John A. Flash economizer. 3,668,838, Cl. 55-191.

McNeil, John A.: *See—*
McNeil, Dalph C.; and McNeil, John A.,3,668,838.

Mc Vay, Robert D.: *See—*
Maurer, Robert F.; Mc Vay, Robert D.; and Hummel, Donald L.,3,669,581.

Mead Corporation, The: *See—*
Forrer, Homer W., 3,669,306.
Funkhouser, James B., 3,669,342.

Medil, S.p.A.: *See—*
Cuffaro, Antonino; Castronovo, Francesco; Bruno, Achille; and Rancati, Gianluigi, 3,670,060.

Medovar, Boris Izrailevich: *See—*
Paton, Boris Evgenievich; Latash, Jury Vadimovich; Medovar, Boris Izrailevich; Emelianenko, July Georgievich; and Kljuev, Mikhail Markovich,3,670,089.

Mehl, Donald N., to Designward Industries, Inc. Mirror frame. 3,668,798, Cl. 40-152.100

Meier, Hans; and Carouge, Frithjof, to Vaillant, Joh., KG. Circulation water heater with domestic hot water supply. 3,669,351, Cl. 237-19.

Meisterling, John W., to Contacts, Incoprorated. Method and apparatus for feeding discrete parts to a cold heading machine. 3,669,334, Cl. 228-3.000

Melamed, Sidney: *See—*
Jones, Wilford Donald; Baldino, James Peter; and Melamed, Sidney,3,670,068.

Melcer, Irving: *See—*
Sair, Louis; and Melcer, Irving,3,669,677.

Melges, Frederick J., to Rymel Corporation. Surgical instrument with trunnioned hinge means. 3,669,115, Cl. 128-305.000

Melpar, Inc.: *See—*
Swindells, Frank E., 3,669,743.

Mentzell, John C.: *See—*
Fahey, Thomas M.; and Mentzell, John C.,3,668,946.
Merck & Co., Inc.: *See—*
Cohen, Edward M.; Grabowski, Edward J. J.; and Aczel, Rezso, 3,670,083.
Patanelli, Dolores J.; and Arth, Glen E., 3,670,079.
Merck, E., A.G.: *See—*
Borck, Joachim; Dahm, Johann; Koppe, Volker; Kramer, Josef; Shorre, Gustav; Hovy, J. W. Hermann; and Schorscher, Ernst, 3,669,956.
Merck Patent Gesellschaft mit beschrankte r Haftung: *See—*
Borck, Joachim; Dahm, Johann; Koppe, Volker; Kramer, Josef; Schoree, Gustav; Hovy, Jan Willem Herman; and Schorscher, Ernst, 3,669,973.
Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Borck, Joachim; Dahm, Johann; Koppe, Volker; Kramer, Josef; Schorre, Gustav; Hovy, Jan Willem; and Schorscher, Ernst, 3,669,972.
Merrill, Stewart H., to Eastman Kodak Company. Process and compositions for protecting images with resin films. 3,669,859, Cl. 204-181.000
Merriman, Inc.: *See—*
Wayson, Andrew J.; and DeStefano, Richard T., 3,669,219.
Merten, Rudolf: *See—*
Zecher, Wilfred; and Merten, Rudolf,3,669,937.
Mesek, Frederick K., to Johnson & Johnson. Method for detection of abnormal milk. 3,668,925, Cl. 73-61.00r
Meslener, George John, to RCA Corporation. Sampling decoder for delay modulation signals. 3,670,249, Cl. 328-110.000
Messer Griesheim GmbH: *See—*
Wernicke, Hans-Joachim, 3,669,437.
Messerschmitt-Bolkow Gesellschaft mit beschrankter Haftung: *See—*
Heinzmann, Werner; and Pfahl, Siegfried, 3,668,851.
Hofmann, Fritz, 3,670,248.
Metaframe Corporation: *See—*
Stasio, Robert, 3,669,074.
Willinger, Allan H., 3,669,297.
Metal Improvement Company, Inc.: *See—*
Morris, John W., 3,668,913.
Metcalf, Charles B., Jr. Device for separating shrimp from other sea animals. 3,668,801, Cl. 43-17.100
Meyer, Edward, to Sylvania Electric Products, Inc. Method of preparing a metal part to be sealed in a glass-ceramic composite. 3,669,715, Cl. 117-53.000
Meyer, Urs: *See—*
Gubler, Kurt; Meyer, Urs; and Brechbuhler, Hans Ulrich,3,669,976.
Meyerhofer, Carl E.: *See—*
Meyerhofer, Leonard G.; and Meyerhofer, Carl E.,3,669,362.
Meyerhofer, Leonard G.; and Meyerhofer, Carl E. Adjustably movable shower head supporting assembly. 3,669,362, Cl. 239-587.000
Meyers, John S.; and Wolofski, Nicholas, to Hoover Ball and Bearing Company. Seat structure. 3,669,498, Cl. 297-452.000
Meyers, Norman W., to Electric Reduction Company of Canada, Ltd. Production of diammonium hydrogen hexafluoro- aluminate and aluminum fluoride. 3,669,619, Cl. 23-52.000
Meyn, Julius, Jr.: *See—*
Thiers, Ralph E.; and Meyn, Julius, Jr.,3,669,626.
Michcon, Lester; and Reagan, Donald W., to Singer Company, The. Device for setting pivotally mounted jacks in a pattern wheel. 3,668,897, Cl. 66-1.00r
Michigan Technological University: *See—*
Goksel, Mehmet Adnan, 3,669,318.
Micklewright, Percy Leonard; and Scaddan, Ernest Victor, to International Standard Electric Corporation. Wire strip and wrap bit. 3,668,763, Cl. 29-203.0dt
Micromedic Systems, Inc.: *See—*
Sanz, Manuel, 3,669,319.
Middelhoek, Simon; and Sasso, Giovanni, to International Business Machines Corporation. Procedure for making semiconductor devices of small dimensions. 3,669,732, Cl. 117-212.000
Middour, Donald R.: *See—*
Henry, Nelson R.; and Middour, Donald R.,3,668,815.
Miki, Toshiro: *See—*
Shoda, Shichiro; Ito, Nobuo; and Miki, Toshiro,3,670,012.
Miles Laboratories, Inc.: *See—*
Doner, Abraham J., 3,670,074.
Lorenzetti, Olfeo John, 3,670,087.
Segel, Edward; and Scheffel, Kenneth G., 3,669,000.
Miller, George J. Ball rolling toy. 3,668,803, Cl. 46-1.
Miller, Johny, Jr.: *See—*
Folden, Virgil A., Jr.; and Miller, Johny, Jr.,3,669,311.
Miller, Manuel S., to G-W Plastic Engineers, Inc. Injection molding machines. 3,669,592, Cl. 425-155.
Miller, Raymond H.: *See—*
Fougere, Guy L.; Rothery, John L.; and Miller, Raymond H.,3,670,243.
Miller, Robert E., to Monsanto Company. Attachment of enzymes to siliceous materials. 3,669,841, Cl. 195-63.
Millerbernd, Paul A. High level light pole including means for lowering lights for servicing. 3,670,159, Cl. 240-65.000
Millmaster Onyx Corporation: *See—*
Beinfest, Sidney; Jacura, Zenon; and Adams, Phillip, 3,669,633.
Mills, Iain C., to Dunlop Holdings Limited. Wheels. 3,669,174, Cl. 152-375.000
Mills, Walter D., to Shell Oil Company. Method and apparatus for determining the com- position of a hydrocarbon-containing fuel mixture. 3,669,627, Cl. 23-230.0pc
Millsop, William Q.; Ellis, Belvin B.; and Burkhardt, Charles E., to Westinghouse Electric Corporation. Magnetic cores and methods of constructing same. 3,670,279, Cl. 336-217.000
Milwaukee Faucets, Inc.: *See—*
Schmitt, William C., 3,669,141.
Minagawa, Nobuhiko: *See—*
Kasugai, Tsuneo; and Minagawa, Nobuhiko,3,669,709.
Minami, Nuneyoshi: *See—*
Asahara, Tomohiko; Yoda, Naoya; and Minami, Nuneyoshi,3,669,930.
Minasian, Harry B., to Ivanhoe Research Corporation. Method and system for automatically assembling limp workpieces, such as garment sections and the like. 3,669,441, Cl. 270-53.000
Minnesota Mining and Manufacturing Company: *See—*
Abler Roger L.; and Strand, David L., 3,669,892.
Cornell, Lew Wallace, 3,669,787.
Donnelly, Charles A.; and Sanders, James F., 3,669,707.
Freerks, Conrad T.; and Luecke, Fred R., Jr., 3,668,814.
Nicholson, Geoffrey C.; and Newman, Donald J., 3,669,747.
Sanders, James F.; Baumgartner, Ronald R.; and Farago, Laszlo D., 3,669,706.
Minolta Camera Company Limited: *See—*
Wazumi, Seiichi, 3,668,985.
Minolta Camera Kabushiki Kaisha: *See—*
Fujii, Yoshifusa, 3,668,994.
Hayashi, Toshio, 3,668,987.
Ogawa, Masaya, 3,669,412.
Misarek, Joseph; and Jaxheimer, William W., to Combustion Control Devices, mesne. Air pollution controller. 3,668,839, Cl. 55-223.000
Mistarz, Robert J., to Cherry-Burell Corporation, mesne. Machine for automatically forming, filling, closing and sealing cartons. 3,669,160, Cl. 141-160.000
Mita, Masazo: *See—*
Kado, Matayuki; and Mita, Masazo,3,668,973.
Mitchell, Archibald S., to LaSalle Machine Tool, Inc. Apparatus for detecting broken tools. 3,669,557, Cl. 408-16.000
Mitchell, Reid L.; Muller, Thomas E.; Stevens, Hugh D.; and Tabke, Robert S., to International Telephone and Telegraph Corporation. Process for forming hydroxyethyl cellulose fibers having high water absorption and high water retention properties. 3,670,069, Cl. 264-187.
Mitchell, William S.: *See—*
Boost, Charles C.; Mitchell, William S.; and Horton, David M.,3,669,870.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Itoh, Toshio; Miyamoto, Toshio; and Wada, Yuichi, 3,670,282.
Kitaoka, Takashi; and Shirashoji, Akira, 3,670,225.
Nakahara, Shojiro; and Kurebayashi, Hidetoshi, 3,670,267.
Saito, Nagao; and Kobayashi, Kazuhiko, 3,670,136.
Mitsubishi Kasei Kogyo Kabushiki Kaisha: *See—*
Fukazawa, Yoshiaki; Iwata, Yoshitaka; and Sakurai, Shigeharu, 3,669,797.
Mitsubishi Petrochemical Company, Limited: *See—*
Sennari, Mutsuo; and Nakajima, Toshihiro, 3,670,053.
Mitsui, Hiromitsu, to Kabushiki Kaisha Suwa Seikosha. Solid state electronic watch. 3,668,861, Cl. 58-50.00r
Mitsui Shipbuilding and Engineering Co., Ltd.: *See—*
Tabuchi, Ichiro; Iwami, Akira; Harita, Yasuhiro; and Yamamoto, Toshiaki, 3,669,284.
Mitsukawa, Konosuke; Hattori, Hiroshi; Hikoda, Toyohiko; and Masubuchi, Yoshinori, to Toyo Rayon Kabushiki Kaisha. Process for production of vapor permeable sheet- like materials. 3,669,792, Cl. 156-249.000
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Miyamae, Toshiaki. Fishing reel with manual or motor drive. 3,669,378, Cl. 242-84.10a
Miyamoto, Toshio: *See—*
Itoh, Toshio; Miyamoto, Toshio; and Wada, Yuichi,3,670,282.
Miyasaka, Mamoru, to Kabushiki Kaisha Suwa Seikosha. Jumper member construction in a calendar watch. 3,668,863, Cl. 58-58.000
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Izawa, Shin-Ichi; Nakamura, Katsuyuki; and Mizoguchi, Yoshiyuki,3,670,033.
Mizutani, Toshio: *See—*
Itaya, Nobushige; Kamoshita, Katsuzo; Mizutani, Toshio; Kitamura, Shigeyoshi; Nakai, Shinji; Kameda, Nobuyuki; Fujimoto, Keimei; and Okuno, Yositosi,3,669,989.
Mobil Oil Corporation: *See—*
Bourguet, Jean M.; and Hart, Francis D., 3,669,903.
Plank, Charles J.; Waldo, Pharez, G.; and Doherty, Harry G., 3,669,875.

Mochizuki, Kazuo: *See—*
Tanaka, Masao; Oka, Tetuo; Fujio, Tatsuro; and Mochizuki, Kazuo,3,669,842.

Mock, Karl Heinz, to Svenska Rotor Maskiner Aktiebolag. Rotary regenerative heat exchangers. 3,669,183, Cl. 165-9.000

Modrey, Henry J. Expansion fastener. 3,668,968, Cl. 85-83.000

Moehlman, Vernon C.; and Klein, Robert J., to Olin Mathieson Chemical Corporation. Shot protector. 3,669,023, Cl. 102-42.00c

Molette, Albert H., Jr.: *See—*
McNally, John M.; and Molette, Albert H., Jr.,3,669,562.

Mollere, John C., to Western Geophysical Company of America. Seismic gas exploder apparatus. 3,669,213, Cl. 181-0.5mc

Monacelli, Walter J.: *See—*
D'Alelio, Gaetano F., 3,669,963.
D'Alelio, Gaetano F., 3,669,964.

Monpetit, Louis A., to Societe des Procedes Modernes d'Injection Soproni. Electronic control system for internal combustion engine injectors. 3,669,080, Cl. 123-32.

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Monroe, Raymond, Jr.: *See—*
Baldwin, Wiley M.; and Monroe, Raymond, Jr.,3,669,635.

Monsanto Company: *See—*
Clarke, Fredric B.; and Lyons, John W., 3,669,893.
Juhl, William G.; and Libers, Roland, 3,670,041.
King, Henry L.; Ringwald, Eugene L.; and Randall, James C., Jr., 3,669,925.
King, Henry L.; Ringwald, Eugene L.; and Randall, James C., Jr., 3,669,933.
King, Henry L.; Ringwald, Eugene L.; and Randall, James C., 3,669,935.
Miller, Robert E., 3,669,841.
Taylor, Keith M., 3,670,006.
Taylor, Keith M., 3,670,008.
Taylor, Keith M., 3,670,009.

Monsanto Research Corporation: *See—*
Johns, Ira B., 3,670,018.

Montague, Bernard R.: *See—*
Leyburn, Derek; Montague, Bernard R.; and Mattila, Henry K.,3,670,109.

Montalbano, Anthony Philip: *See—*
Teague, Walter Dorwin, Jr.; Montalbano, Anthony Philip; Oakes, Andrew A.; Osborne, Keith; and Susey, Peter E.,3,668,784.

Montecatini Edison S.p.A.: *See—*
Caldo, Cornelio; Danielli, Ezio; Incollingo, Italo; and Protospataro, Francesco, 3,669,829.

Montes, Leopoldo F. Method of treating psoriasis with cycloheximide. 3,670,084, Cl. 424-268.000

Moody, Anthony Gifford; and Symcox, Robert Owen, to Imperial Chemical Industries Limited. Acetoacetate of 2-hydroxymethyl-5-norbornene. 3,670,011, Cl. 260-483.000

Moody, Roy A.; Sullivan, John F.; and Thayer, Arlie J., to Panduit Corporation. Connector clip. 3,668,744, Cl. 24-73.0pb

Moore, Brian Joseph: *See—*
Watkinson, Leonard James; and Moore, Brian Joseph,3,669,668.

Moore, Francis C. Method of laminating plastic foam. 3,669,786, Cl. 156-163.000

Moore, Howard V., to Pacific Valves, Inc. Ball valve. 3,669,406, Cl. 251-315.

Moore, Joseph B.; and Athey, Roy L., to United Aircraft Corporation. Production of fine grained ingots for the advanced superalloys. 3,669,180, Cl. 164-122.000

Moore, Joseph G.: *See—*
Liermann, Charles J.; and Moore, Joseph G.,3,668,711.

Moore, Leslie D., to Nalco Chemical Company. Catalytic conversion of nitriles to amides. 3,670,020, Cl. 260-561.00n

Morane, Bruno P., to L'Oreal. Sanitary napkin. 3,669,114, Cl. 128-290.

Morehouse, Edward Lewis, to Union Carbide Corporation. Solution compositions of siloxane-oxyalkylene copolymers and amine catalysts and use for manufacture of polyurethane foam. 3,669,913, Cl. 260-2.5ah

Morgan Construction Company: *See—*
Gilvar, Martin; Conlon, Charles E.; and Lleger, Alfred R., 3,669,377.

Morgan, William A.: *See—*
Jones, Jerry J.; Keenon, Delbert L.; Morgan, William A.; and Lochridge, Joe C.,3,668,878.

Mori, Kinya: *See—*
Konotsune, Shiro; Kachi, Atsuyuki; Tonoike, Takao; and Mori, Kinya,3,669,948.

Mori, Kunio; and Shirage, Yoshio, to Nippon Kokan Kabushiki Kaisha. Sliding apparatus of a movable bridge. 3,668,729, Cl. 14-43.000

Moring, Peter L. E.: *See—*
Goy, Ronald S.; and Moring, Peter L. E.,3,668,857.

Morita, Minoru; Shiraki, Takashi; and Masuoka, Sadao, to Matsushita Electric Industrial Co., Ltd. Method for manufacturing magnetic heads. 3,668,775, Cl. 29-603.000

Moriyama, Keiichi: *See—*
Yamamoto, Akira; and Moriyama, Keiichi,3,669,740.

Morris, John W., to Metal Improvement Company, Inc. Apparatus for shot-peening turbine blades. 3,668,913, Cl. 72-53.000

Morrison, James G., to National Steel Corporation. Corrosion resistant articles having a zinc surface and process for preparing the same. 3,669,705, Cl. 117-17.000

Mortensen, Donald G.: *See—*
Scharmann, Garred N.; Warn, Kermit W.; and Mortensen, Donald G.,3,668,730.

Morton-Norwich Products, Inc.: *See—*
Burkhalter, Robert, Jr.; Heskett, Don Edward; and Hoover, Frank Kryder, 3,669,148.

Moser, Raymond L.: *See—*
Gutman, Nathan; Moser, Raymond L.; Oldenburg, Dorrance; and Sunderlin, Donald E.,3,669,161.

Moses, Adrian J., to Lear Siegler, Inc. Selective signal transmission system. 3,670,148, Cl. 235-150.2

Motley, David M.; and Salman, Naif D., to North American Rockwell Corporation. System for phase locking on a virtual carrier received by an asymmetrical receiver. 3,669,511, Cl. 325-329.000

Motomi, Kano: *See—*
Masayasu, Arikawa; Motomi, Kano; Katsuro, Iio; and Toshio, Tanaka,3,669,335.

Motor Wheel Corporation: *See—*
Derleth, Robert J., 3,669,501.

Motorenfabrik Hatz KG: *See—*
Hatz, Ernst, 3,669,082.

Motorola, Inc.: *See—*
Beuk, Ljubomir; Dogadko, Peter; and Sansbury, Larry, 3,669,086.
Brand, Warren L., 3,669,724.
Dame, John S., 3,670,303.
Frederiksen, Thomas M., 3,670,219.
O'Neal, Donald V., 3,668,937.

Mott, Richard C., to Honeywell Inc. Hydrodynamic pump. 3,669,561, Cl. 415-90.000

Mottern, Henry O.: *See—*
Heiberger, Charles A.; and Mottern, Henry O.,3,670,056.

Moulin, Norbert L., to Hughes Aircraft Company. Hardness testing machine. 3,669,261, Cl. 209-74.000

Moulton, Alexander Eric; and Harman, Harold, to Moulton Developments Limited. Vehicle suspension unit. 3,669,225, Cl. 188-298.000

Moulton, David M.: *See—*
Novack, Robert L.; Moulton, David M.; and Juda, Walter,3,669,752.

Moulton Developments Limited: *See—*
Moulton, Alexander Eric; and Harman, Harold, 3,669,225.

Mountfield, Brian Arthur: *See—*
English, Geoffrey; and Mountfield, Brian Arthur,3,669,910.

Mounts, Frank William: *See—*
Candy, James Charles; Franke, Gladys Marie; and Mounts, Frank William,3,670,096.

Mouritzen, Gunnar, to Geoscience Limited. Transportation system. 3,669,026, Cl. 104-118.000

Muehlbauer, Heinz A.: *See—*
Garrett, Dwight A.; and Muehlbauer, Heinz A.,3,669,280.

Mueller Co.: *See—*
Luckenbill, Lawrence F.; and Hackman, Frank C., 3,669,475.

Mueller, Herbert; Koehl, Harald; and Pommer, Horst, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of 2-methyl-2-hepten-6-one. 3,670,028, Cl. 260-593.

Muhler, Joseph C., to Indiana University Foundation. Dental prophylaxis composition comprising alumina of particular particle size. 3,670,076, Cl. 424-157.000

Muller, Thomas E.: *See—*
Mitchell, Reid L.; Muller, Thomas E.; Stevens, Hugh D.; and Tabke, Robert S.,3,670,069.

Mundt, James E.; and Powell, Milan, to Weatherhead Company, The. Valve stem. 3,669,407, Cl. 251-334.000

Munekata, Takashi; and Uchida, Eizaburo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Chloro-nitro substituted phenyl esters of aliphatic acids. 3,669,998, Cl. 260-410.5

Munn, Gerhard: *See—*
Harbrecht, Karl; and Munn, Gerhard,3,668,969.

Munzing, Robert, to Mas, Ernst. Current collector for vehicles of electric toy and model railroad installations. 3,670,115, Cl. 191-45.00r

Murase, Yoshihiko: *See—*
Matsuura, Hideo; Imagawa, Katsuhiko; and Murase, Yoshihiko,3,669,214.

Murcia, Alfonso. Modular shelving and furniture. 3,669,033, Cl. 108-111.

Murenbeeld, Karel. Device for automatically regulating the thread consumption of warped knitting machines. 3,668,904, Cl. 66-86.00a

Muro, Koji: *See—*
Shimauchi, Shiro; Yoshida, Saburo; and Muro, Koji,3,669,611.

Murphy, Edmund, to Cooling Developments Ltd. Cooling medium-moving devices for gas-liquid contacting apparatus. 3,669,421, Cl. 261-25.

Murphy, Peter C.; and Lawrence, J. Richard, to Mallory, P. R., & Co., Inc. Tungsten base welding rod, method for making same and novel applications of same. 3,669,656, Cl. 75-176.000

Murray, William Bruce. Corrosion inhibiting method. 3,669,615, Cl. 21-2.7

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Murray, William Bruce; Kise, Mearl A.; and Kelly, Thomas Edward, to Virginia Chemicals Inc. Corrosion inhibiting compositions and method. 3,669,616, Cl. 21-2.700

Myers, Michael C.: *See—*
Sarsten, Jan A.; Zacks, Kenneth I.; and Myers, Michael C.,3,668,882.

Nachbur, Hermann; Kern, Joerg; and Maeder, Arthur, to Ciba Limited. Flameproofing of polyester-cellulose fibre materials. 3,669,725, Cl. 117-136.000

Nadsady, Clarence A., to Wiggins, E. B., Inc. Coupling device with spring locking detent means. 3,669,472, Cl. 285-87.000

Nadtochenko, Andrei Fedorovich: *See—*
Budman, Moisei Izrailevich; Kaganovsky, Frederik Isaakovich; Kapitanov, Nikolai Ivanovich; Karzov, Jury Nikolaevich; Nadtochenko, Andrei Fedorovich; Slavetsky-Kotvitsky, Eduard Sebostyanovich; and Shorokhov, Leonid Pavlovich,3,668,921.

Nagae, Kenji: *See—*
Fujiwara, Shigeru; Nagae, Kenji; and Okuhashi, Tomomi,3,669,736.

Nagai, Akira: *See—*
Fukawa, Mitsunosuke; Oishi, Haruo; Saruya, Kichitaro; Nagai, Akira; and Nagai, Yoshitaro,3,669,766.

Nagai, Yoshitaro: *See—*
Fukawa, Mitsunosuke; Oishi, Haruo; Saruya, Kichitaro; Nagai, Akira; and Nagai, Yoshitaro,3,669,766.

Nagasaki, Ryukichi: *See—*
Kondo, Tatsuo; Nakajima, Hajime; and Nagasaki, Ryukichi,3,669,759.

Nagele, Erwin, to Bosch, Robert, G.m.b.H. Circuit breaker. 3,670,280, Cl. 337-111.000

Nagle, Floyd B.: *See—*
Chiu, Thomas T.; Hock, Kenneth R.; and Nagle, Floyd B.,3,669,718.

Naito, Koichiro: *See—*
Oishi, Masashi; Shimada, Michihiko; Nakayama, Yuji; Naito, Koichiro; and Okamoto, Kazuhiko,3,669,645.

Najvar, Daniel J., to Dow Chemical Company, The. Process and compositions for making porous low density thermoset resins from water-in-resin emulsions. 3,669,911, Cl. 260-2.50n

Nakagawa, Saburo: *See—*
Nakao, Osakazu; Nakagawa, Saburo; Hirose, Juichi; Yamazaki, Shigeyuki; Amano, Takashi; Nakamura, Toshio; and Yamamoto, Hiroyuki,3,669,916.

Nakagawa, Takashi; Tsutsumi, Tadashi; and Hori, Hiroo, to Tokyo Shibaura Electric Co., Ltd. Semiconductor photosensitive device with a rare earth oxide compound forming a rectifying junction. 3,670,213, Cl. 317-234.00r

Nakaguchi, Kohei; Nishikida, Tomozumi; Kawasumi, Shohachi; Maemoto, Kenichi; Sano, Takezo; Fujii, Yoshikazu; Harada, Koichi; and Ueda, Keijyu, to Sumitomo Chemical Company, Ltd. Process for producing a homopolymer or copolymer of ethylene with novel catalyst. 3,669,945, Cl. 260-85.30r

Nakahara, Shojiro; and Kurebayashi, Hidetoshi, to Mitsubishi Denki Kabushiki Kaisha. Microwave switch utilizing latched ferrimagnetic material in coupling aperture of waveguide coupler. 3,670,267, Cl. 333-1.100

Nakai, Shinji: *See—*
Itaya, Nobushige; Kamoshita, Katsuzo; Mizutani, Toshio; Kitamura, Shigeyoshi; Nakai, Shinji; Kameda, Nobuyuki; Fujimoto, Keimei; and Okuno, Yositosi,3,669,989.

Nakajima, Hajime: *See—*
Kondo, Tatsuo; Nakajima, Hajime; and Nagasaki, Ryukichi,3,669,759.

Nakajima, Jun: *See—*
Doi, Kazuo; Nakajima, Jun; Takahashi, Hisamitsu; and Tomokawa, Hideo,3,669,699.

Nakajima, Toshihiro: *See—*
Sennari, Mutsuo; and Nakajima, Toshihiro,3,670,053.

Nakamura, Katsuyuki: *See—*
Izawa, Shin-Ichi; Nakamura, Katsuyuki; and Mizoguchi, Yoshiyuki,3,670,033.

Nakamura, Toshio: *See—*
Nakao, Osakazu; Nakagawa, Saburo; Hirose, Juichi; Yamazaki, Shigeyuki; Amano, Takashi; Nakamura, Toshio; and Yamamoto, Hiroyuki,3,669,916.
Sato, Nobuyasu; Nakamura, Toshio; and Takenaka, Hiroshi,3,669,987.

Nakao, Osakazu; Nakagawa, Saburo; Hirose, Juichi; Yamazaki, Shigeyuki; Amano, Takashi; Nakamura, Toshio; and Yamamoto, Hiroyuki, to Tomoegawa Paper Manufacturing Company Limited. A solution of a graft copolymer of cellulose. 3,669,916, Cl. 260-17.4

Nakao, Yoshio; Kuno, Mitsuzo; Yamatodani, Saburo; Tanaka, Fumihiko; and Nojiri, Tsutomu, to Takeda Chemical Industries, Ltd. Method for the production of coenzyme A. 3,669,836, Cl. 195-28.

Nakata, Roy; and Oppel, John A., to General Electric Company. High voltage ceramic capacitor assembly. 3,670,222, Cl. 317-261.000

Nakatani, Hiroshi: *See—*
Takamura, Akira; Kunii, Kazushi; Seharada, Saburo; and Nakatani, Hiroshi,3,669,222.

Nakato, Masuo: *See—*
Wada, Ryuji; Suzuki, Hiroshi; and Nakato, Masuo,3,669,514.

Nakayama, Junn; and Fukatsu, Yukio, to Asahi Glass Co., Ltd. Introducing nitrogen gas into the melt to improve fused cast refractories. 3,670,061, Cl. 264-82.000

Nakayama, Yuji: *See—*
Oishi, Masashi; Shimada, Michihiko; Nakayama, Yuji; Naito, Koichiro; and Okamoto, Kazuhiko,3,669,645.

Nakazato, Katsuo: *See—*
Konno, Tsuyoshi; Nakazato, Katsuo; and Ise, Satoshi,3,670,182.

Nalco Chemical Company: *See—*
Moore, Leslie D., 3,670,020.

Nameny, Frank J. Pumping apparatus. 3,669,578, Cl. 418-45.

Nanba, Kazuhiko: *See—*
Suzuki, Ichizo; Yasui, Hideo; and Nanba, Kazuhiko,3,669,696.

Nardelli, Orazio J.: *See—*
Fox, David J.; King, Jane E.; and Nardelli, Orazio J.,3,670,306.

National Automatic Tool Company, Inc.: *See—*
Snider, Theodore O.; and Teeple, Michael D., 3,669,599.

National Cash Register Company, The: *See—*
Landis, Donald E.; and Sidhu, Mohanjit S., 3,668,942.

National Distillers and Chemical Corporation: *See—*
Bartsch, Raymond C.; and Lerman, Frank, 3,669,922.
Goetz, Richard W.; and Mador, Irving L., 3,670,021.
Platz, Gerald M.; and Honn, James B., 3,669,347.
Robinson, Robert E., 3,670,034.

National Dust Collector Corporation: *See—*
McIlvaine, Robert W., 3,668,825.

National Forge Company: *See—*
Witkin, Donald E., 3,669,301.

National Patent Development Corporation: *See—*
de Long, Charles F.; and Shepherd, Thomas H., 3,669,691.
Shepherd, Thomas H.; and Gould, Francis E., 3,670,073.

National Research Development Corporation: *See—*
Hobden, Maurice Vernon; Rich, George Joseph; and Robertson, Daniel Stewart, 3,670,186.

National Starch and Chemical Corporation: *See—*
Tessler, Martin M.; and Rutenberg, Morton W., 3,669,890.

National Steel Corporation: *See—*
Morrison, James G., 3,669,705.

Natschke, Eldred H., to Universal Railway Devices Company. Sealed non-spin hand brake arrangement. 3,668,944, Cl. 74-505.

Nauheimer, Robert R.; and Khaja, Farees Uddin, to Sunbeam Corporation. Percolator coffee basket and filter assembly. 3,669,694, Cl. 99-310.000

Nauman, Edward F.: *See—*
Vassiliades, Anthony E.; Nauman, Edward F.; and Shroff, Shrenik,3,669,899.

Neal, Warren D.: *See—*
Wooten, Robert D.; Neal, Warren D.; and Einfeldt, George J.,3,669,245.

Nebel, Franz P. Apparatus for removing moisture. 3,669,012, Cl. 100-121.000

Nebel, Franz P. Apparatus for processing flowable particulate solid material. 3,669,604, Cl. 425-379.

Nebgen, William H. Refrigeration system, heat recovery system, refrigerated gas compression system and Brayton cycle system. 3,668,884, Cl. 62-228.000

Neddenriep, Donald O.: *See—*
Breslin, Mary Anne; Cogar, George R.; Lee, Charles A.; Neddenriep, Donald O.; Romeo, Albert J.; Sevilla, Ernesto G.; and Sekse, Torkjell,3,670,144.

Nederlandse Organisatie Voor Tolgepast-Natuurweten Schappelijk Ondeszoek Ten Behowe Van Nijvirheid: *See—*
van Staveren, Pieter, 3,668,867.

Neff, Dean O. Apparatus for mounting and positioning of excavating devices. 3,669,285, Cl. 214-138.00c

Negro, Guido, to Bielomatik Leuze & Co. Apparatus for manufacturing spirals from threads of synthetic thermoplastics material. 3,669,583, Cl. 425-214.000

Neher, Martin Duane: *See—*
Carter, J. Warne; and Neher, Martin Duane,3,668,766.

Neider-Westermann, Winfried: *See—*
Johnson, James C.; and Neider-Westermann, Winfried,3,668,998.

Nelson, L. R., Mfg. Co., Inc.: *See—*
Hanson, Richard E.; and Lippitt, Raymond F., 3,669,353.

Nelson, Melvin J. Footing tile for transverse flow of seepage. 3,668,829, Cl. 52-169.

Nelson, Vaughn A., to International Harvester Company. Decellerator means for expansible chamber device. 3,668,975, Cl. 91-409.000

Neptune Microfloc, Incorporated: *See—*
Dunnahoe, Richard G.; Bondahl, Gary B.; and Roth, Paul W., 3,669,741.
Slechta, Alfred F.; Culp, Gordon L.; and Dunnahoe, Richard G., 3,669,742.

Neumann, Robert P.: *See—*
Conn, Charles E., Jr.; and Neumann, Robert P.,3,668,769.

Neuweg Fertigungs GmbH: *See—*
Berndt, Hans; and Kreuzer, Hubert, 3,668,871.

Nevarez, Richard J., to Abelow, Joseph, mesne. Fiber glass reinforced mold for cementitious building. 3,669,401, Cl. 249-27.000

Nevsky, Vyacheslav Alexandrovich: *See—*
Voitsekhovsky, Bogdan Vyacheslavovich; Kuvshinov, Viktor Alexandrovich; Plaxin, Vladimir Nikolaevich; and Nevsky, Vyacheslav Alexandrovich,3,668,914.

New Britain Machinery Company: *See—*
Talmage, Charles Robert, 3,668,951.

Newcomb, Arthur L., Jr.; and Young, Richard N. A. C. power amplifier. 3,670,253, Cl. 330-17.000

Newman, Donald J.: *See—*
Nicholson, Geoffrey C.; and Newman, Donald J.,3,669,747.

Newman, Douglas A.; and Schlotzhauer, Allan T., to Columbia Ribbon and Carbon Manufacturing Co. Transfer elements and process for preparing same. 3,669,713, Cl. 117-36.400

Niccore, Fred W.: *See—*
Andresen, Rolf; Fiorino, Benjamin C.; and Niccore, Fred W.,3,670,304.

Nicholas, George E.; and Watkins, Howard G. Building construction framework with receivers for bracing means. 3,668,828, Cl. 52-92.000

Nicholson, Geoffrey C.; and Newman, Donald J., to Minnesota Mining and Manufacturing Company. Heat-sensitive copy-sheet. 3,669,747, Cl. 117-36.900

Nicolay, Karl, to Durkoppwerke GmbH. Sewing machine for the formation of a rectangular stitch pattern. 3,669,043, Cl. 112-76.000

Nido, Jay, to Koppers Company, Inc. Sheet length control system. 3,668,957, Cl. 83-37.

Niehaus, Wolfgang: *See—*
Kucbens, Alexander; and Niehaus, Wolfgang,3,669,312.

Nielander, Henrik. Machine for mixing, plasticating and pressing out of plastics, rubber and other highly viscous materials at controlled pressure. 3,669,415, Cl. 259-12.000

Nielsen, Lars Stig, to Christian Rovsing A/S. Device for starting or stimulating heart contractions. 3,669,120, Cl. 128-419.

Nielsen, Robert N., Jr.: *See—*
Mardon, Austin; and Nielsen, Robert N., Jr.,3,670,328.

Nielson, Caldon M. Fishing pole holder. 3,669,390, Cl. 248-42.000

Nieuwenhuis, Willem H. M.: *See—*
Van Westrenen, William J.; De Carpentier, Pieter; and Nieuwenhuis, Willem H. M.,3,669,942.

Nigst, Henry: *See—*
Reber, Willy Ernst; Nigst, Henry; Haas, Josef; Batzer, Hans; and Zuppinger, Paul,3,669,708.

Nikodimov, Anatoly Pavlovich: *See—*
Ivchenko, Georgy Semenovich; Berestovoi, Anatoly Mikhailovich; Khanchas, Vladislav Fedorovich; and Nikodimov, Anatoly Pavlovich,3,669,317.

Nilsson, Bertil: *See—*
Soderstrom, Gill Gunnar; Nilsson, Bertil; and Stahl, Nils Evert Johan,3,670,146.

Nippon Cloth Industry Co., Ltd.: *See—*
Yokota, Tadashi; and Asai, Taizo, 3,669,784.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Matsuura, Hideo; Imagawa, Katsuhiko; and Murase, Yoshihiko, 3,669,214.

Nippon Hoso Kyokai: *See—*
Kamegaya, Takeo; Imahori, Yutaka; Ohta, Akira; Kanoh, Tadao; and Ohara, Akio, 3,670,195.

Nippon Kayaku Kabushiki Kaisha: *See—*
Takenaka, Shigeo; and Iwamoto, Akira, 3,669,949.

Nippon Kogaku K.K.: *See—*
Shio, Megumu, 3,669,524.

Nippon Kokan Kabushiki Kaisha: *See—*
Mori, Kunio; and Shirage, Yoshio, 3,668,729.

Nippon Piston Ring Co., Ltd.: *See—*
Togami, Shunji, 3,669,461.

Nippon Seiko Kabushiki: *See—*
Takahashi, Tadanobu; and Usami, Kunihiko, 3,669,519.

Nippon Sheet Glass Co., Ltd.: *See—*
Inoue, Touru; Yamada, Tetsuya; and Noguichi, Seizo, 3,669,639.

Nippon Soda Co., Ltd.: *See—*
Homma, Shumzo; and Harada, Minoru, 3,669,648.

Nippon Steel Corporation: *See—*
Oishi, Masashi; Shimada, Michihiko; Nakayama, Yuji; Naito, Koichiro; and Okamoto, Kazuhiko, 3,669,645.

Nischk, Gunther: *See—*
Lorenz, Gunter; Gallus, Manfred; Giessler, Wolfgang; and Nischk, Gunther,3,669,928.

Nishidz, Masamitsu; and Ouchi, Hiromu, to Matsushita Electric Industrial Co., Ltd. Piezoelectric ceramic compositions. 3,669,887, Cl. 252-62.9

Nishikida, Tomozumi: *See—*
Nakaguchi, Kohei; Nishikida, Tomozumi; Kawasumi, Shohachi; Maemoto, Kenichi; Sano, Takezo; Fujii, Yoshikazu; Harada, Koichi; and Ueda, Keijyu,3,669,945.

Nissan Motor Company, Limited: *See—*
Shiobara, Masaji; and Watanabe, Genji, 3,669,424.

Niwa, Kunimori; Shibai, Hiroshiro; Yasunaga, Masahiro; Hirose, Yoshio; and Shiro, Teruo. Method of producing protease by microorganism. 3,669,844, Cl. 195-66.00r

Nogaj, Richard J., to Keene Corporation. Aeration apparatus. 3,669,422, Cl. 261-34.

Noguichi, Seizo: *See—*
Inoue, Touru; Yamada, Tetsuya; and Noguichi, Seizo,3,669,639.

Noiles, Douglas G., to Ivanhoe Research Corporation. Method and system for automatically forming parts for garments, and the like. 3,669,443, Cl. 270-69.000

Nojima, Takeo, to Jupitor Corporation of Washington. Ball bearing structure. 3,669,515, Cl. 308-16.000

Nojiri, Tsutomu: *See—*
Nakao, Yoshio; Kuno, Mitsuzo; Yamatodani, Saburo; Tanaka, Fumihiko; and Nojiri, Tsutomu,3,669,836.

Nonaka, Masahide, to United States of America, Agriculture. Process for recovery of meat essences. 3,669,690, Cl. 99-140.00r

Noothout, Arend J.: *See—*
Kanij, Johannes B. W.; and Noothout, Arend J.,3,669,632.

North American Philips Corporation: *See—*
Biederman, Stuart J.; and Jezewski, Walter E., 3,668,760.

North American Rockwell Corporation: *See—*
August, Rudolf R.; and Palmquist, Richard L., 3,670,218.
Conn, Charles E., Jr.; and Neumann, Robert P., 3,668,769.
Motley, David M.; and Salman, Naif D., 3,669,511.
Shaheen, Joseph M.; and Simone, John, 3,668,776.
Sinizer, David I.; Toy, Albert; Atteridge, David G.; and Fanelli, Louis H., 3,669,364.
Tindal, James A., 3,668,708.

Northern Electric Company Limited: *See—*
Warner, Wesley John, 3,670,110.

Nova, Antonio; Nova, Oscar; and Nova, Renzo, to Officine Meccaniche Antonio Nova. Apparatus for making shoes. 3,669,590, Cl. 425-119.

Nova, Oscar: *See—*
Nova, Antonio; Nova, Oscar; and Nova, Renzo,3,669,590.

Nova, Renzo: *See—*
Nova, Antonio; Nova, Oscar; and Nova, Renzo,3,669,590.

Novack, Robert L.; Moulton, David M.; and Juda, Walter, to Prototech Company. Method of operating fuel cell. 3,669,752, Cl. 136-86.000

Novella, Vladimir Nikolaevich: *See—*
Maranchak, Vasily Makarovich; Novella, Vladimir Nikolaevich; and Veisky, Stanislav Petrovich,3,670,240.

Novo Terapeutisk Laboratorium A/S: *See—*
Aunstrup, Knud; and Mahler, Jorn Leo, 3,669,843.

Novotny, John E.: *See—*
United States of America,National Aeronautics and Space Administration, Administrator, 3,670,202.

Nowak, Bernard E.: *See—*
Cottis, Steve G.; Nowak, Bernard E.; and Economy, James,3,669,738.

Nowicki, Casimir W., to Owens-Illinois, Inc. Method for forming plastic articles. 3,670,062, Cl. 264-97.000

Nozawa, Yoshikuni; Ishikawa, Mitsuo; and Kikuchi, Junjiro, to Sankyo Kogaku Kogyo Kabushiki Kaisha. Cassette-loading means for cassette tape recorder. 3,669,457, Cl. 274-4.

Nuckols, Phillip H.: *See—*
Green, Edgar E.; and Nuckols, Phillip H.,3,669,195.

Numata, Saburo: *See—*
Idei, Gijun; and Numata, Saburo,3,670,184.

Nunn, Howard R. Anti-pollution chamber. 3,668,841, Cl. 55-257.000

N.V. Bekaert S.A.: *See—*
Wieme, Andre A., 3,668,756.

N.V. Gereedschappenfabriek: *See—*
Spierenburg, Gozen, 3,669,077.

N.V. Ingeieursbureau voor Systemen en Octrooien Spanstaal: *See—*
van der Veen, Romke, 3,669,140.

Oakes, Andrew A.: *See—*
Teague, Walter Dorwin, Jr.; Montalbano, Anthony Philip; Oakes, Andrew A.; Osborne, Keith; and Susey, Peter E.,3,668,784.

Oberheim, Robert: *See—*
Hofmann, Erich; Krull, Ernst; Johannsen, Werner Hans; Oberheim, Robert; and Scheibel, Josef,3,669,534.

Ockel, Gustav, to Klippan GmbH, Firma. Snaplock for safety belts. 3,668,747, Cl. 24-241.000

Odell, Paul J. Automatic parking device. 3,669,200, Cl. 180-1.0as

Odermann, Charles R.: *See—*
Adams, Kenneth D.; and Odermann, Charles R.,3,669,044.

Office National d'Etudes et de Recherches Aerospatiales:*See—*
Besson, Jean R.; Cumer, Joseph F.; and Hoarau, Roland J., 3,669,549.

Officine Meccaniche Antonio Nova: *See—*
Nova, Antonio; Nova, Oscar; and Nova, Renzo, 3,669,590.

Ogata, Masaru: *See—*
Watanabe, Yoshihachi; and Ogata, Masaru,3,670,082.

Ogawa, Masaya, to Minolta Camera Kabushiki Kaisha. Circuitry for controlling an electrostatic copier. 3,669,412, Cl. 355-3.000

Ogden, Charles T.: *See—*
Fusco, Vito A.; Ogden, Charles T.; and Illman, Walter F.,3,668,852.

Ogle, Robert K., to Shafter Concrete Pipe Co. Apparatus for burying riser pipe. 3,668,879, Cl. 61-72.600

Oglebay Norton Company: *See—*
Hayes, Robert R.; Fuller, John L.; and Stockham, James R., 3,669,449.

Ohara, Akio: *See—*
Kamegaya, Takeo; Imahori, Yutaka; Ohta, Akira; Kanoh, Tadao; and Ohara, Akio,3,670,195.

O'Hara, James; and Gibbins, Charles Lewis, to Calmic Limited. Sanitary apparatus. 3,668,716, Cl. 4-226.000

Ohi, Reiichi: *See—*
Shiba, Keis uke; Ohi, Reiichi; and Shishido, Tadao,3,669,672.

Ohiwa, Hitoshi: *See—*
Imai, Tomio; Shimamura, Mutsuo; Yoshitake, Juichi; and Ohiwa, Hitoshi,3,669,845.

Ohshita, Takashi: *See—*
Susuki, Rinnosuke; Hoshi, Hiroshi; Araki, Shinichi; and Ohshita, Takashi,3,669,321.

Ohta, Akira: *See—*
Kamegaya, Takeo; Imahori, Yutaka; Ohta, Akira; Kanoh, Tadao; and Ohara, Akio,3,670,195.
Ohta, Hiram H.: *See—*
Charlton, Gregory G.; Hanratty, Robert J.; and Ohta, Hiram H.,3,670,336.
Ohta, Takahiro: *See—*
Utsugi, Mikio; and Ohta, Takahiro,3,669,789.
Ohtani, Yoshio, to Diesel Kiki Kabushiki Kaisha. Electrical alarm device for oil filters responsive to water sediment level. 3,670,319, Cl. 340-244.00c
Oishi, Asao; and Sashino, Shozzo, to Hitachi, Ltd. Control device for stopping rotation of water turbine. 3,669,560, Cl. 415-41.000
Oishi, Haruo: *See—*
Fukawa, Mitsunosuke; Oishi, Haruo; Saruya, Kichitaro; Nagai, Akira; and Nagai, Yoshitaro,3,669,766.
Oishi, Masashi; Shimada, Michihiko; Nakayama, Yuji; Naito, Koichiro; and Okamoto, Kazuhiko, to Nippon Steel Corporation. Method for operating an oxygen top-blowing converter. 3,669,645, Cl. 75-60.
Oka, Tetuo: *See—*
Tanaka, Masao; Oka, Tetuo; Fujio, Tatsuro; and Mochizuki, Kazuo,3,669,842.
Okamoto, Kazuhiko: *See—*
Oishi, Masashi; Shimada, Michihiko; Nakayama, Yuji; Naito, Koichiro; and Okamoto, Kazuhiko,3,669,645.
Okamoto, Tadashi; Kobayashi, Tsuyoshi; and Yamamoto, Hisao, to Sumitomo Chemical Company, Ltd. Novel amides of 3-indolylacetic acid. 3,669,960, Cl. 260-240.00j
Okamoto, Toshio: *See—*
Terasaki, Iwao; Kimura, Yoshio; Okamoto, Toshio; Shima, Tsukasa; Kohno, Mitsuo; and Kitamura, Kazuyuki,3,669,927.
Okuhashi, Tomomi: *See—*
Fujiwara, Shigeru; Nagae, Kenji; and Okuhashi, Tomomi,3,669,736.
Okuniewski, Vincent F.: *See—*
Flowers, Leonard B.; and Okuniewski, Vincent F.,3,670,160.
Okuno, Yositosi: *See—*
Itaya, Nobushige; Kamoshita, Katsuzo; Mizutani, Toshio; Kitamura, Shigeyoshi; Nakai, Shinji; Kameda, Nobuyuki; Fujimoto, Keimei; and Okuno, Yositosi,3,669,989.
Tsuchiya, Hiroshi; Kunio, Nishinomiya-Shi; Kimura, Akio; Kawano, Suminori; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Okuno, Yositosi; Tanaka, Katsutoshi; Ooishi, Tadashi; and Takeda, Hisami,3,670,057.
Okuya, Eitaro: *See—*
Komatsu, Koei; Okuya, Eitaro; Tomioka, Katsuyoshi; Sakai, Masato; Hayashi, Shigeki; Yasunaga, Hidetoshi; and Kogure, Akira,3,669,943.
Okuyama, Susumu, to Kabushiki Kaisha Ricoh. Microfilm camera. 3,669,539, Cl. 355-64.000
Oldenburg, Dorrance: *See—*
Gutman, Nathan; Moser, Raymond L.; Oldenburg, Dorrance; and Sunderlin, Donald E.,3,669,161.
Olin Corporation: *See—*
Faust, John P., 3,669,894.
Olin Mathieson Chemical Corporation: *See—*
Moehlman, Vernon C.; and Klein, Robert J., 3,669,023.
Oliver, Donald S., to Itek Corporation. Facsimile system utilizing prescan detection of indicia. 3,670,099, Cl. 178-6.
Ollivier, Louis A.: *See—*
Sundblom, Leif J.; and Ollivier, Louis A.,3,669,108.
Olson, David A.: *See—*
Bang, Mogens W.; and Olson, David A.,3,670,286.
Olson, Robert S.; and Surls, Joseph P., Jr., to Dow Chemical Company, The. Process for recovery of beryllium. 3,669,649, Cl. 75-101.000
Olympia Werke A.G.: *See—*
Thevis, Paul; Schneider, Adolf; and Jakubaschk, Horst, 3,669,348.
Olympus Optical Co., Ltd.: *See—*
Takahashi, Nagashige, 3,669,098.
O'Neal, Donald V., to Motorola, Inc. Key slide locking mechanism. 3,668,937, Cl. 74-10.330
Ontario Development Corporation: *See—*
Ratowsky, Simon, 3,668,997.
Ooishi, Tadashi: *See—*
Tsuchiya, Hiroshi; Kunio, Nishinomiya-Shi; Kimura, Akio; Kawano, Suminori; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Okuno, Yositosi; Tanaka, Katsutoshi; Ooishi, Tadashi; and Takeda, Hisami,3,670,057.
Oppel, John A.: *See—*
Nakata, Roy; and Oppel, John A.,3,670,222.
Orban, Robert A., to Parasound, Inc. Stereo synthesizer. 3,670,106, Cl. 179-1.00g
Orcon Corporation: *See—*
Bascomb, Hollis H.; and Greci, John J., 3,669,790.
Ordnance Research Incorporated: *See—*
Waite, Hal R.; and Lucy, Carl F., 3,669,020.
Ordway, Fred, Jr.: *See—*
Divecha, Amarnath P.; Lare, Paul J.; Ordway, Fred, Jr.; Hermann, Robert A.; Van Blaricon, Orville B.; and Hahn, Henry,3,668,748.
Orlando, Daniel: *See—*
Buttke, Richard A.; Sabatino, Anthony; Orlando, Daniel; and Behrens, William H.,3,668,761.
Osborne, Keith: *See—*
Teague, Walter Dorwin, Jr.; Montalbano, Anthony Philip; Oakes, Andrew A.; Osborne, Keith; and Susey, Peter E.,3,668,784.
Osteng, Tor. Arrangement in explosion joining of high tension lines and the like. 3,670,090, Cl. 174-90.000
Oteki, Yuzo, to Beltek Kabushiki Kaisha. Cassette mounting and dismounting device. 3,669,456, Cl. 274-4.
Otis Engineering Corporation: *See—*
Sizer, Phillip S.; and Schwegman, Harry E., 3,669,190.
Otto, Stanley W.: *See—*
Spaw, Eugene S.; McGrath, Paul F.; and Otto, Stanley W.,3,669,014.
Ouchi, Hiromu: *See—*
Nishida, Masamitsu; and Ouchi, Hiromu,3,669,887.
Outboard Marine Corporation: *See—*
Irgens, Finn T., 3,669,162.
Shimanckas, William J., 3,669,057.
Shimanckas, William J., 3,669,058.
Ovalstrapping, Inc.: *See—*
Pasic, James A., 3,669,486.
Overbury, Francis Giles: *See—*
Earp, Charles William; and Overbury, Francis Giles,3,670,337.
Overby, Charles A. Injection and distribution unit for a lawn sprinkler system. 3,669,357, Cl. 239-310.000
Overy, Lester R., to Tokheim Corporation. Instrument drive system for fluid metering. 3,670,317, Cl. 340-198.000
Owens, Kermeth L. Filtered tobacco pipe. 3,669,127, Cl. 131-194.000
Owens, Roy L., Jr. Method and apparatus for introducing liquid into vehicle tires. 3,669,159, Cl. 141-1.000
Owens-Corning Fiberglas Corporation: *See—*
Pearson, Lee E., 3,668,740.
Wong, Robert; and Hill, Homer G., 3,669,638.
Owens-Illinois, Inc.: *See—*
Nowicki, Casimir W., 3,670,062.
Oyama, Yoshishige: *See—*
Hohsho, Yukio; Yamada, Koichiro; Oyama, Yoshishige; Teranishi, Takao; and Suzuki, Seikou,3,669,423.
Ozaki, Toshiaki: *See—*
Tsuchiya, Hiroshi; Kunio, Nishinomiya-Shi; Kimura, Akio; Kawano, Suminori; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Okuno, Yositosi; Tanaka, Katsutoshi; Ooishi, Tadashi; and Takeda, Hisami,3,670,057.
Pacific Car and Foundry Company: *See—*
Bryan, Darrel L.; and Maisch, Larry D., 3,669,293.
Dunlap, Dennis L.; and Bryan, Darrel L., 3,669,467.
Pacific Valves, Inc.: *See—*
Moore, Howard V., 3,669,406.
Pacific Vegetable Oil Corporation: *See—*
Cummings, Lowell O., 3,669,900.
Padmanathan, Thurairajah, to American Cyanamid Company. 1,3,2-oxazaborinides and method for preparing the same. 3,669,985, Cl. 260-310.00a
Padr, Zdenek: *See—*
Mansfeld, Viktor; and Padr, Zdenek,3,670,075.
Pagdin, William Gordon; Smith, Walter I.; Smith, Wayne A.; and Le Tendre, Eugene F., to Schlitz, Jos., Brewing Company. Conveyor. 3,669,244, Cl. 198-137.000
Page, Derrick J.; and Driver, Michael C., to Westinghouse Electric Corporation. Method of producing thin film transistors. 3,669,661, Cl. 96-36.200
Page, Derrick J.; and Raygor, Paul O., to Westinghouse Electric Corporation. Mask changing mechanism for use in the evaporation of thin film devices. 3,669,060, Cl. 118-7.000
Pakulak, Lucile A.: *See—*
Douglas, Larry D., 3,670,301.
Pakulak, Pete: *See—*
Douglas, Larry D., 3,670,301.
Pall Corporation: *See—*
Gross, Robert I., 3,668,837.
Palmai, Robert, to Sheller-Globe Corporation. Oil filter. 3,669,144, Cl. 137-525.
Palmer, Alan B.: *See—*
Iler, Ralph K.; and Palmer, Alan B.,3,669,695.
Palmer, Robert D. Posture improving device. 3,670,320, Cl. 340-279.000
Palmquist, Richard L.: *See—*
August, Rudolf R.; and Palmquist, Richard L.,3,670,218.
Pandjiris, Anthony K.; Frederick, Arthur I.; and Weinfurt, Edward J., to Pandjiris Weldment Co., The. Welding head. 3,670,139, Cl. 219-130.000
Pandjiris Weldment Co., The: *See—*
Pandjiris, Anthony K.; Frederick, Arthur I.; and Weinfurt, Edward J., 3,670,139.
Panduit Corporation: *See—*
Moody, Roy A.; Sullivan, John F.; and Thayer, Arlie J., 3,668,744.
Pannell, McNeal. Radiator holding device. 3,669,438, Cl. 269-20.000
Panzer, Hans P.; Yare, Robert S.; and Forbes, Malcolm R., to General Foods Corporation. Green bean decaffeination employing fluorinated hydrocarbons. 3,669,679, Cl. 99-70.000
Papin, Joseph E.; and Stokes, Stanley L., to Wagner Electric Corporation. Control valve. 3,669,506, Cl. 303-6.00c
Pappas, Lambros A.: *See—*
Grankowski, Eugene E.; and Pappas, Lambros A.,3,668,920.

Paramonov, Nikolai Parfentievich. Apparatus for determining fat concentration in materials. 3,669,629, Cl. 23-259.000

Parascandola, Louis J.: *See—*
Thorington, Luke; and Parascandola, Louis J.,3,670,193.

Parasound, Inc.: *See—*
Orban, Robert A., 3,670,106.

Parcell, Robert F., to Parke, Davis & Company. Process for producing 3-(3,4-dimethoxyphenyl) -L-alarine by enzymatic resolution. 3,669,837, Cl. 195-29.000

Parenti, Giorgio, to Sisi-Marchetti S.p.A. Fuel delivery system for a plurality of aircraft engines. 3,669,136, Cl. 137-113.

Park, Gavin Muldrew: *See—*
Petronelli, Claudio; and Park, Gavin Muldrew,3,669,294.

Parke, Davis & Company: *See—*
Parcell, Robert F., 3,669,837.

Parker, James M., to Parkton Corporation. Lawn mower apparatus. 3,668,845, Cl. 56-11.600

Parker, James W. Coin counting and rolling apparatus. 3,669,131, Cl. 133-8.00a

Parker-Hannifin Corporation: *See—*
Brown, Carl A., 3,669,268.

Parkman, William Terence; and MacCormac, James Kenneth Maxwell, to Elliott Brothers (London) Limited. Automatic flight control systems. 3,670,149, Cl. 235-150.22

Parks, Worthel C., to Vaughan & Bushnell Mfg. Co. Impact tool and compound handle-retaining wedge therefor. 3,669,512, Cl. 306-33.000

Parkton Corporation: *See—*
Parker, James M., 3,668,845.

Parr, Norman Lawrence; and Brown, Robin Lawford. Spray deposition of silicon powder structures. 3,669,723, Cl. 117-105.200

Parsons, Hubert J., to Hardinge Brothers Inc. 3 and 4 leaf machine tool collets. 3,669,462, Cl. 279-51.000

Parvin, Allan I.; and Roome, Douglas P., to Standard Packaging Corporation. Packaging machine. 3,668,820, Cl. 53-112.00r

Pasic, James A., to Ovalstrapping, Inc. Corner clip and bale lifting method. 3,669,486, Cl. 294-74.000

Pastva, John V. , Jr.; and Pastva, John V., Jr. Key-controlled door lock. 3,668,907, Cl. 70-153.000

Pastva, John V., Jr.: *See—*
Pastva, John V. , Jr.; and Pastva, John V., Jr.,3,668,907.

Patanelli, Dolores J.; and Arth, Glen E., to Merck & Co., Inc. Anabolic agents. 3,670,079, Cl. 424-241.000

Paton, Boris Evgenievich; Latash, Jury Vadimovich; Medovar, Boris Izrailevich; Emelianenko, July Georgievich; and Kljuev, Mikhail Markovich, to Institut Elektros varki Im. E.O. Patona. Apparatus for electroslag remelting of metals with molten slag introduction. 3,670,089, Cl. 13-9.000

Patterson, Michael P. Combination greeting card and three dimensional ornament. 3,668,796, Cl. 40-126.00a

Paulson, Theodore C. Mold for a hollow block. 3,669,402, Cl. 249-150.000

Pauly, Donald E., to Telemation, Inc. Shifting phase in a television camera. 3,670,181, Cl. 307-262.000

Pauly, Ronald R., to Tonka Corporation. Axle mounting for toy vehicles. 3,668,806, Cl. 46-201.000

Payne, Harold A. Structural connections. 3,669,479, Cl. 287-189.36c

Peake, Thaddeus A.: *See—*
De Core, Fred; Peake, Thaddeus A.; and Marshall, Ted R.,3,668,768.

Pearson, Lee E., to Owens-Corning Fiberglas Corporation. High strength strap and method of making it. 3,668,740, Cl. 24-16.0pb

Pechiney-Progil: *See—*
Demosay, Daneil; Pillon, Daniel; and Ducret, Jacques, 3,669,975.

Peebles, Joseph M., to Pillsbury Company, The. Apparatus for heating grain. 3,669,363, Cl. 241-8.000

Peet, James, 1/2 to West Bridgford Machine Co., Limited. Take down apparatus for circular seamless hose knitting machines. 3,668,900, Cl. 66-149.

Peiffer, Harold E.; and Kohl, Ralph A., to Eastman Kodak Company. Fluid dispensing apparatus. 3,668,996, Cl. 95-89.00r

Pennachetti, John T.; and Boux, Joseph F., to Enercon International Limited. Process for the treatment of fly ash and product. 3,669,703, Cl. 106-288.00b

Pennwalt Corporation: *See—*
Henshaw, Charles Edward, 3,668,819.

Pera, John D.: *See—*
Buckman, Stanley J.; Buckman, John D.; Pera, John D.; and Raths, Fred W.,3,670,004.

Pera, John D.; and Raths, Fred W., to Buckman Laboratories, Inc. S-chloromethyl compounds of 2-mercaptobenzothi- azoles, 2-mercaptobenzoxazoles, and 2- mercapto- benzimidazoles. 3,669,981, Cl. 260-306.000

Perina, Joseph, to American Velcro, Inc. Window glass retention system. 3,668,808, Cl. 49-465.000

Perkins, Carl C., Jr.: *See—*
Conway, Maurice A.; Perkins, Carl C., Jr.; and Bellem, Norman A.,3,669,051.

Perkins, Donald V.: *See—*
Jones, Doyle P.; Kohrn, Robert C.; and Perkins, Donald V.,3,669,299.

Perren, Stefan: *See—*
Allgower, Martin; Perren, Stefan; and Russenberger, Max E.,3,668,972.

Persson, Lennart Gerhard: *See—*
Andersson, Rolf Urban; and Persson, Lennart Gerhard,3,669,344.

Perusek, Ronald J., to General Electric Company. Traveling solvent method of growing silicon carbide crystals and junctions utilizing yttrium as the solvent. 3,669,763, Cl. 148-171.000

Pet Chemicals, Inc.: *See—*
Coleman, William R.; and Duffey, Thomas E., 3,670,078.

Petcraft Industries Incorporated: *See—*
Loscalzo, Nicholas R., 3,668,736.

Peters, Frank Groom; Sinclair, William Robert; and Sullivan. Miles Vincent, to Bell Telephone Laboratories, Incorporated. Technique for the preparation of iron oxide films by cathodic sputtering. 3,669,863, Cl. 204-192.

Peters, John E.; and Rollfinke, Fred J., to Chase Brass and Copper Company Incorporated. Metal composites. 3,669,634, Cl. 29-182.1

Petersen, Jorgen Hartvig; and Sturlason, Leif Viggo, to Danfoss A/S. Atomizing nozzle, particularly for oil-burners. 3,669,419, Cl. 239-544.000

Peterson, Arnold E., to Peterson Baby Products. Reclining car seat. 3,669,492, Cl. 297-253.000

Peterson Baby Products: *See—*
Peterson, Arnold E., 3,669,492.

Peterson, Lawrence M., to Barber-Colman Company. Butterfly damper. 3,669,152, Cl. 138-46.000

Petro-Tex Chemical Corporation: *See—*
Croce, Louis J.; Bajars, Laimonis; and Gabliks, Maigonis, 3,670,042.
Friedrich, Heinz G., 3,669,877.

Petroczky, Frank G. Hair combs. 3,669,130, Cl. 132-138.

Petrolite Corporation: *See—*
Annand, Robert R.; Redmore, Derek; and Rushton, Brian M., 3,669,612.

Petronelli, Claudio; and Park, Gavin Muldrew. Safety closures. 3,669,294, Cl. 215-9.000

Petrow, Henry G.: *See—*
Allen, Robert J.; and Petrow, Henry G.,3,669,749.

Petzold, Manfred: *See—*
Rall, Ulrich; Frotscher, Herbert; and Petzold, Manfred,3,669,702.

Pfahl, Siegfried: *See—*
Heinzmann, Werner; and Pfahl, Siegfried,3,668,851.

Pfizer Inc.: *See—*
Fried, John H., 3,669,839.
Hess, Hans-Jurgen E., 3,669,968.
Wyatt, James B.; George, Peter D.; and Van Dyck, Kenneth, 3,669,104.

Pfluger, Gerhard, to Bosch, Robert, G.m.b.H. Starting arrangement for internal combustion engines. 3,670,173, Cl. 290-38.00r

Pfund, Adolph; and Sobel, Morton, to Sobel Industries. Plastic cup dispenser. 3,669,307, Cl. 221-63.000

Philco-Ford Corporation: *See—*
Cote, Alfred A., 3,668,924.

Philip, Morris. Yarn stand. 3,669,379, Cl. 242-131.000

Phillip Petroleum Company: *See—*
Kinney, Alfred W.; and Marshall, Frederick P., 3,669,305.

Phillips, Floyd L., Jr., to Reynolds, R. J., Tobacco Company. Display cartons and convertible shipping and display cartons and blanks therefor. 3,669,251, Cl. 206-44.

Phillips, Leslie Nathan, to United Kingdom of Great Britain and Northern Ireland, Minister of Technology in Her Britannic Majesty's Government of the. Continuous carbon fibre tapes. 3,669,158, Cl. 139-420.

Phillips Petroleum Company: *See—*
Brown, James D.; and Uraneck, Carl A., 3,669,798.
Drehman, Lewis E.; and Walker, Darrell W., 3,670,044.
Kinney, Alfred W., 3,669,340.
Roark, William G., 3,669,874.
Stapp, Paul R., 3,669,992.
Tucker, Alvin S., 3,669,598.

Picunko, Thomas: *See—*
Bucher, Paul E.; and Picunko, Thomas,3,669,551.

Pierick, Richard L. Air cleaner. 3,668,840, Cl. 55-239.000

Piibe, Rein: *See—*
Glegg, Keith C. M.; Haberl, John F.; Baumans, Hans W.; and Piibe, Rein,3,670,329.

Pike, Winthrop Selley, to RCA Corporation. Electrical circuit. 3,670,179, Cl. 307-221.000

Pillon, Daniel: *See—*
Demosay, Daneil; Pillon, Daniel; and Ducret, Jacques,3,669,975.

Pillsbury Company, The: *See—*
Leezer, James R.; Reid, Francis R.; Turpin, Charles H.; and Rejsa, Jack J., 3,669,346.
Peebles, Joseph M., 3,669,363.
Turpin, Charles Henry; and Ryan, John A., 3,668,981.

Piper Precision Dies, Inc.: *See—*
Rupprecht, Charles F.; and Wiker, Frank, 3,668,955.

Pitman, Richard W., to Varityper Corporation. Keyboard for a printing machine. 3,669,236, Cl. 197-98.000

Plaat, Carl, Firma: *See—*
Mager, Elisabeth; Schulz, Helga; and Schulz, Peter, 3,669,112.

Plake, William C.: *See—*
Hardy, Richard W.; Knowlen, Robert B.; Sandifer, Cecil W.; and Plake, William C.,3,670,164.

Plank, Charles J.; Waldo, Pharez, G.; and Doherty, Harry G., to Mobil Oil Corporation. Two stage reforming process. 3,669,875, Cl. 208-65.000

Plasser, Franz; and Theurer, Josef. Tamper unit for mobile track tamping machine. 3,669,025, Cl. 104-12.000
Platz, Gerald M.; and Honn, James B., to National Distillers and Chemical Corporation. Flat-bottom plastic bags. 3,669,347, Cl. 229-58.000
Platzer, Maximilian F.: *See—*
Jacobs, Willi F.; and Platzer, Maximilian F.,3,669,386.
Plaven, Erik. Process for recovery of starch and gluten by washing a dough of wheat flour. 3,669,739, Cl. 127-67.000
Plaxin, Vladimir Nikolaevich: *See—*
Voitsekhovsky, Bogdan Vyacheslavovich; Kuvshinov, Viktor Alexandrovich; Plaxin, Vladimir Nikolaevich; and Nevsky, Vyacheslav Alexandrovich,3,668,914.
Plummer, Claude A.: *See—*
Roberts, Lonnie D.; and Plummer, Claude A.,3,669,487.
Plummer, Walter A.: *See—*
Gillemot, George W., 3,669,777.
Pneumo Dynamics Corporation: *See—*
Beidler, Glenn S., 3,668,977.
Podiak, Richard S.; Mack, James M.; and Bretsch, Michael A., to Champion Spark Plug Company. Spark plug seat. 3,668,749, Cl. 29-25.120
Podraza, Chester S., to Blackstone Manufacturing Co., Inc. Spare tire and wheel carrier for travel trailers, motor homes, pickup trucks, campers and the like. 3,669,326, Cl. 224-42.210
Pogge, H. Bernhard: *See—*
Badami, Angelo V.; Ebert, Ekkehard,; Kemlage, Bernard M.; Kroell, Karl E.; and Pogge, H. Bernhard,3,669,769.
Polaroid Corporation: *See—*
Erlichman, Irving, 3,668,991.
Polin, Herbert S.; and Kuhn, Gustavo, to Vogel, Paul. Time setting device for an electronic clock. 3,668,859, Cl. 58-23.000
Pollard, Kenneth Lloyd. Coping and fascia trim. 3,668,811, Cl. 52-94.000
Polychrome Corporation: *See—*
Golda, Eugene; and Taudien, Alfred, 3,669,660.
Polymer Processing Research Institute Ltd.: *See—*
Yazawa, Masahide; and Tani, Haruhisa, 3,669,795.
Pommer, Horst: *See—*
Mueller, Herbert; Koehl, Harald; and Pommer, Horst,3,670,028.
Pommeret, Henri Louis Etienne. Method and apparatus for producing vibrations or impulses. 3,670,223, Cl. 318-124.
Popek, Wencil D.: *See—*
McAllister, Lewis L.; and Popek, Wencil D.,3,668,750.
Popivalo, Andrew C. Measuring and dispensing container. 3,669,322, Cl. 222-454.000
Porta, Paolo Della; and Rabusin, Elio, to S.A.E.S. Getters S.p.A. Gettering. 3,669,567, Cl. 417-48.000
Porter, Herschel D., to Lilly, Eli, and Company. Substituted dispiropentadecanes. 3,669,986, Cl. 260-326.50d
Porter, Ian S., to Wilson & Longbottom Limited. Gripper shuttles for looms for weaving. 3,669,156, Cl. 139-125.
Porter, Robert B.: *See—*
Johnson, Robert W.; and Porter, Robert B.,3,668,943.
Porter, Roy A., to Bell Telephone Laboratories, Incorporated. Removal of boron and phosphorous-containing glasses from silicon surfaces. 3,669,775, Cl. 156-17.000
Posey, John T. Lap cover and restrainer. 3,669,107, Cl. 128-134.000
Posl, Rudolf: *See—*
Krall, Heribert; Maag, Helmut; Herrmann, Otto; and Posl, Rudolf,3,669,176.
Post Office, The: *See—*
Ager, David Joseph; and Stanley, Ian William, 3,670,183.
Powell, Milan: *See—*
Mundt, James E.; and Powell, Milan,3,669,407.
PPG Industries, Inc.: *See—*
Bowser, George H.; Shoop, Vernon A.; Pyzewski, Stanley J.; Mazzoni, Renato J.; and Bologna, John P., 3,669,785.
Seiner, Jerome A., 3,669,728.
Seiner, Jerome A., 3,669,729.
Pratt, Ivor: *See—*
Hall, Roger P.; Pratt, Ivor; and Young, Richard A.,3,669,796.
Pratt, Thomas H.; and Rieger, Michael L. Refuse compactor. 3,669,009, Cl. 100-52.000
Precision Valve Corporation: *See—*
Focht, John Richard, 3,669,359.
Preier, Horst M.: *See—*
Lehovec, Krut; Hielscher, Frank H.; and Preier, Horst M.,3,670,198.
Preininger, Erich; and Ging, Dieter, to Ciba-Geigy AB. Inorganic white pigments containing optical brighteners and process for their manufacture. 3,669,896, Cl. 252-301.30w
Prentice, James B., to Procter & Gamble Company, The. Ethanecarbony!-1,2-diphosphonic acid, water- soluble salts thereof and process for preparation. 3,670,015, Cl. 260-52.40p
Pribil, Rudolf: *See—*
Emr, Antonin; and Pribil, Rudolf,3,669,988.
Prickett, Warren Wilson: *See—*
Harker, Royce Kenneth; Prickett, Warren Wilson; and Roesch, Kurt Fritz,3,669,323.
Priestley, Hill M.; and Wilson, James H., to Lever Brothers Company. Detergent compositions. 3,670,027, Cl. 260-593.00r
Procter & Gamble Company, The: *See—*
Prentice, James B., 3,670,015.
Seiden, Paul, 3,669,848.
Proctor-Silex Incorporated: *See—*
Eaton, John L., Jr.; Richard, Kenneth L.; and Schwartz, Walter M., Jr., 3,669,004.
Profab Inc.: *See—*
Sharron, Paul A., 3,668,799.
Properzi, Ilario. Rolling mill. 3,668,911, Cl. 72-43.000
Protospataro, Francesco: *See—*
Caldo, Cornelio; Danielli, Ezio; Incollingo, Italo; and Protospataro, Francesco,3,669,829.
Prototech Company: *See—*
Allen, Robert J.; and Petrow, Henry G., 3,669,749.
Novack, Robert L.; Moulton, David M.; and Juda, Walter, 3,669,752.
Prototech Incorporated: *See—*
Juda, Walter, 3,669,750.
Pryor, David Ernest; and Forsyth, Bruce Adam, to Imperial Chemical Industries of Australia and New Zealand Limited. Injectable therapeutic tetramisole formulations. 3,670,085, Cl. 424-270.000
Pryor, David Ernest; and Forsyth, Bruce Adam, to Imperial Chemical Industries of Australia and New Zealand Limited. Injectable tetramisole compositions. 3,670,086, Cl. 424-270.000
P.T. & T. Industries, Inc.: *See—*
Copeland, John H., 3,669,425.
Pulici, Louis. Method and apparatus for rolling and tucking filled foodstuffs. 3,669,007, Cl. 99-450.600
Pulver, Willis Clark, to Velten & Pulver, Inc. Conveyor system and attachments therefor. 3,669,247, Cl. 198-189.000
Purcell, Thomas H., Jr., to ESB Incorporated. Reserve liquid storage and dispensing device. 3,669,320, Cl. 222-389.000
Pyzewski, Stanley J.: *See—*
Bowser, George H.; Shoop, Vernon A.; Pyzewski, Stanley J.; Mazzoni, Renato J.; and Bologna, John P.,3,669,785.
Quantum, Inc.: *See—*
Doede, Clinton M.; and Combs, Eugene E., 3,669,719.
Rabow, Gerald, to International Telephone and Telegraph Corporation. Frequency modulation demodulation system. 3,670,252, Cl. 329-112.
Rabusin, Elio: *See—*
Porta, Paolo Della; and Rabusin, Elio,3,669,567.
Ragland, Evan L., II: *See—*
Wagner, Robert L.; and Ragland, Evan L., II,3,669,237.
Raion Yushi Kabushiki Kaisha: *See—*
Susuki, Rinnosuke; Hoshi, Hiroshi; Araki, Shinichi; and Ohshita, Takashi, 3,669,321.
Raley, Charles F., Jr., to Dow Chemical Company, The. Bituminous compositions containing high molecular weight ethylene/propylene copolymer. 3,669,918, Cl. 270-28.500
Rall, Ulrich; Frotscher, Herbert; and Petzold, Manfred, to Bohme Chemie Gesellschaft mbH. Silicone emulsions. 3,669,702, Cl. 106-287.000
Ralston Purina Company: *See—*
Karr, Melvin R.; and Hodge, Dean E., 3,669,676.
Ralston, Robert E.; and Ko, Yung Ling, to Mallory, P. R., & Co., Inc. Process of making a molded negative electrode. 3,669,754, Cl. 136-126.000
Ramsey, Richard T.: *See—*
Spencer, John H.; Ramsey, Richard T.; and Gilbertson, Warren L.,3,669,021.
Rancati, Gianluigi: *See—*
Cuffaro, Antonino; Castronovo, Francesco; Bruno, Achille; and Rancati, Gianluigi,3,670,060.
Randall, James C., Jr.: *See—*
King, Henry L.; Ringwald, Eugene L.; and Randall, James C., Jr.,3,669,925.
King, Henry L.; Ringwald, Eugene L.; and Randall, James C., Jr.,3,669,933.
King, Henry L.; Ringwald, Eugene L.; and Randall, James C.,3,669,935.
Randar, Magnus, to Artos Engineering Company. Automatic terminal applicator for insulated non- metallic ignition type wires. 3,668,764, Cl. 29-203.00d
Rasmussen, Torben Borup, to Kroyer, Karl Kristian Kobs. Method for the production of fibrous sheet materials. 3,669,778, Cl. 156-62.200
Ratajczyk, James Daniel: *See—*
Swett, Leo Ralph; and Ratajczyk, James Daniel,3,669,983.
Raths, Fred W.: *See—*
Buckman, Stanley J.; Buckman, John D.; Pera, John D.; and Raths, Fred W.,3,670,004.
Pera, John D.; and Raths, Fred W.,3,669,981.
Ratowsky, Simon, to Jephcott, William C., Rickard, Jean M., and Ontario Development Corporation, mesne. Processing of photographic material. 3,668,997, Cl. 95-93.000
Rattan, William D., to Robertshaw Controls Company. Thermally responsive switch and method for making the same. 3,670,281, Cl. 337-112.
Rattman, William J.; Wasson, Frank R., Jr.; and Mackenzie, Gordon C., to Raytheon Company. Optical depth finder and elements therefor. 3,669,540, Cl. 356-4.000
Raychem Corporation: *See—*
Hess, Robert L., 3,669,824.
Raygor, Paul O.: *See—*
Page, Derrick J.; and Raygor, Paul O.,3,669,060.
Raymond, Douglas G., to SCM Corporation. Impregnation and lamination resin solutions, methods and articles produced thereby. 3,669,727, Cl. 117-148.000

Raymus, Grantges J., to Union Carbide Corporation. End capped cylindrical package. 3,669,255, Cl. 206-59.00f

Raytheon Company: *See—*
Connerney, William R., 3,670,268.
Edwards, Oliver J., Jr., 3,669,523.
Rattman, William J.; Wasson, Frank R., Jr.; and Mackenzie, Gordon C., 3,669,540.
Smith, Burton H., 3,670,196.
Unger, Robert McCowan, 3,670,197.

RCA Corporation: *See—*
Allington, Trevor Richard, 3,669,733.
Dismukes, John Pickett, 3,669,774.
Feldstein, Nathan, 3,669,770.
Fisher, Dennis Glendon, 3,669,735.
Husni, Saleem Ynees, 3,668,770.
Jacob, Charles Junior; and Lawton, Gerald Wayne, 3,669,734.
Meslener, George John, 3,670,249.
Pike, Winthrop Selley, 3,670,179.
Rempert, Lawrence Arnold; and Helpert, Edward Philip, 3,670,153.
Sen Ih, Charles Chung; and Lurie, Michael Jay, 3,669,673.

Reactor Centrum Nederland: *See—*
Kanij, Johannes B. W.; and Noothout, Arend J., 3,669,632.

Reagan, Donald W.: *See—*
Michcon, Lester; and Reagan, Donald W.,3,668,897.

Reber, Willy Ernst; Nigst, Henry; Haas, Josef; Batzer, Hans; and Zuppinger, Paul. Process for the manufacture of flexible surgical and orthopedic bandage materials. 3,669,708, Cl. 117-33.000

Redland Bricks Limited: *See—*
Schueler, George Berthold Edward, 3,670,063.

Redmore, Derek: *See—*
Annand, Robert R.; Redmore, Derek; and Rushton, Brian M.,3,669,612.

Reese, James R., to Cal-Val Co. Flow stabilizer for pilot-operated modulating valve system. 3,669,143, Cl. 137-512.300

Refrigeration Engineering Corporation: *See—*
Martin, Walter Harper, 3,669,239.

Regenass, Franz; Schlumbom, Peter Christoph; and Heller, Hansjorg. Polydimercapto-s-triazines. 3,669,936, Cl. 260-77.5

Regie Nationale des Usines Renault: *See—*
Guettier, Michel, 3,669,510.
Le Mire, Noel, 3,669,397.

Reguzzoni, Riccardo: *See—*
Ackermann, Jacob; Croce, Roberto; and Reguzzoni, Riccardo,3,670,016.

Reichhold-Albert-Chemie Aktiengesellschaft: *See—*
Broecker, Bernhard, 3,670,047.

Reid, Francis R.: *See—*
Leezer, James R.; Reid, Francis R.; Turpin, Charles H.; and Rejsa, Jack J.,3,669,346.

Reiling, Thomas L. Non-curling decalcomania paper comprising a discontinuous polymer-starch particle barrier layer. 3,669,704, Cl. 117-3.600

Reilly, Arthur J. Hydraulic press. 3,669,605, Cl. 425-398.

Rein, Hans-Martin; and Conze, Peter, to Licentia Patent-Verwaltungs-G.m.b.H. Methods of producing diffusion regions in semiconductor bodies. 3,669,760, Cl. 148-1.500

Reist, Walter, to Ferag, Fehr & Reist AG. Method for preventing the deformation of folded newspapers, magazines etc. during the transport thereof in flakelike superposed stacks. 3,669,008, Cl. 100-35.000

Rejsa, Jack J.: *See—*
Leezer, James R.; Reid, Francis R.; Turpin, Charles H.; and Rejsa, Jack J.,3,669,346.

Remer, Robert K., to Inca Inks, Inc. Printing and coating method. 3,669,720, Cl. 117-93.310

Rempert, Lawrence Arnold; and Helpert, Edward Philip, to RCA Corporation. Machine implemented method for positioning and inspecting an object. 3,670,153, Cl. 235-151.110

Renold, Walter. Free floating pressure roller means and retracting mechanism for film drive. 3,669,331, Cl. 226-176.000

Renz, Eberhard; Voss, Siegfried; and Ecke, Gunter, to Aktien-Gesellschaft 'Weser'. Mooring buoy. 3,668,725, Cl. 9-8.00r

Republic Steel Corporation: *See—*
Cappel, Fred, 3,669,618.

Retention Communication Systems, Inc.: *See—*
Catalano, Paul; and Bickel, John, 3,669,374.

Rex Chainbelt Inc.: *See—*
Schrader, Preston H., 3,668,939.

Reynolds, R. J., Tobacco Company: *See—*
Phillips, Floyd L., Jr., 3,669,251.

Reynolds, Robert W.; Bibeau, James K.; and Jansen, Francis J., to Xerox Corporation. Developer apparatus. 3,669,072, Cl. 118-637.000

Reynolds, Thomas J.: *See—*
Blanchet, James P.; Hotes, Charles M.; and Reynolds, Thomas J.,3,669,329.

Rheinmetall G.m.b.H.: *See—*
Harbrecht, Karl; and Munn, Gerhard, 3,668,969.

Rhodes, Arthur Neville; and Blackburn, Denis Edward, to British Aircraft Corporation Limited. Aeroplanes having variable sweep wings. 3,669,367, Cl. 244-46.000

Ribback, Bernd. Machine tool for plastic shaping or fashioning. 3,668,915, Cl. 72-76.

Rich, Everett W. Wheeled toy. 3,669,468, Cl. 280-267.000

Rich, George Joseph: *See—*
Hobden, Maurice Vernon; Rich, George Joseph; and Robertson, Daniel Stewart,3,670,186.

Richard, Kenneth L.: *See—*
Eaton, John L., Jr.; Richard, Kenneth L.; and Schwartz, Walter M., Jr.,3,669,004.

Richardson, Edwin A.: *See—*
Coles, Roy D.; and Richardson, Edwin A.,3,669,188.

Richardson, Harry L.: *See—*
Avena, Salvatore; and Richardson, Harry L.,3,668,940.

Richardson, Harry L.; and Craig, Robert C., to Chemical Construction Corporation. Electrostatic precipitator. 3,668,836, Cl. 55-131.000

Richardson, John M., to Hughes Aircraft Company. Device for producing identifiable sine and cosine (fourier) transforms of input signals by means of noncoherent optics. 3,669,528, Cl. 350-205.000

Richman, Peter D. Electric battery comprising a fuel cell hydrogen generator and heat exchanger. 3,669,751, Cl. 136-86.

Richter, Hans H., to Leesona Corporation. Friction twister element. 3,668,856, Cl. 57-77.400

Richter, Hans H.: *See—*
Leeson, Richmond T.; and Richter, Hans H.,3,668,855.

Richter, Wolfgang Max Egon; Lab, Edgar; and Sieblist, Hans Werner, to Schmalbach-Lubeca-Werke Aktiengesellschaft. Process and device for advancing and simultaneously centering sheet material. 3,668,959, Cl. 83-48.000

Rickard, Jean M.: *See—*
Ratowsky, Simon, 3,668,997.

Ricoh Co., Ltd.: *See—*
Kobayashi, Yugoro, 3,669,537.

Riddell, Vernon A., to Thiokol Chemical Corporation. Spline wear gauge. 3,668,783, Cl. 33-179.50r

Riebling, Eugene F.: *See—*
Dalton, Robert H.; and Riebling, Eugene F.,3,669,693.

Rieder, Otto E., to General Impact Extrusions (Manufacturing) Ltd. Method of forming a heat exchanger. 3,668,757, Cl. 29-157.30r

Riegel Paper Corporation: *See—*
Cole, Raymond A., 3,669,345.

Riegel Textile Corporation: *See—*
Gore, Graves T., 3,669,800.

Rieger, Michael L.: *See—*
Pratt, Thomas H.; and Rieger, Michael L.,3,669,009.

Rieker, Justus, & Co.: *See—*
Stohr, Rudolf; and Stelzer, Werner, 3,668,793.

Riello Condizionatori S.A.S. di Giordano Riello & C.: *See—*
Riello, Valerio Giordano, 3,668,887.

Riello, Valerio Giordano, to Riello Condizionatori S.A.S. di Giordano Riello & C. Air conditioning apparatuses. 3,668,887, Cl. 62-262.000

Ries, Robert G., to Square D Company. Current responsive switching module. 3,670,273, Cl. 335-204.000

Riggs, Robert F., to Sperry Rand Corporation. Radar collision avoidance indicator. 3,670,330, Cl. 343-11.00r

Rinehart, Kenneth L., Jr.: *See—*
Shier, Wayne Thomas; Rinehart, Kenneth L., Jr.; and Gottlieb, David,3,669,838.

Ring, Raymond M., to Aloma Products, Inc. Shoe holding apparatus. 3,668,733, Cl. 15-267.000

Ringwald, Eugene L.: *See—*
King, Henry L.; Ringwald, Eugene L.; and Randall, James C., Jr.,3,669,925.
King, Henry L.; Ringwald, Eugene L.; and Randall, James C., Jr.,3,669,933.
King, Henry L.; Ringwald, Eugene L.; and Randall, James C.,3,669,935.

Risi, Walter, to Martini Buchbindereimaschinenfabrik AG. Apparatus for transporting stacks of sheets or the like. 3,669,246, Cl. 198-179.000

Ritchey, James F.: *See—*
Bukosky, Allen A.; Flavin, Michael A.; Hill, Donald G.; Huizinga, Donald D.; and Ritchey, James F.,3,670,111.

Rittenbach, Otto E., to United States of America, Army. Scanning means and method for search radar. 3,670,331, Cl. 343-11.00r

Ritter, Helmut, to Heberlein Patent Corporation. Yarn handling apparatus. 3,669,330, Cl. 226–174,000

Roark, William G., to Phillips Petroleum Company. Method of increasing catalyst activity in sour crude catalytic reformers. 3,669,874, Cl. 208-79.000

Robbins & Myers, Inc.: *See—*
Goebel, Robert W., 3,670,190.

Robelen, Russell J.: *See—*
Amdahl, Gene M.; Arnold, Richard F.; Dauber, Philip S.; Freiman, Charles V.; Robelen, Russell J.; Schorr, Herbert; and Wierzbicki, John R.,3,670,309.
Arnold, Richard F.; Dauber, Philip S.; Freiman, Charles V.; Robelen, Russell J.; and Wierzbicki, John R.,3,670,307.

Roberge, James K.: *See—*
Grossimon, Herbert P.; McDonough, James O.; and Roberge, James K.,3,670,180.

Roberts, Daniel Frank Thomas, to Foster Wheeler John Brown Boilers Limited. Joining of tubes to tube plates. 3,670,140, Cl. 219-137.000

Roberts, Lonnie D.; and Plummer, Claude A. Tool. 3,669,487, Cl. 294-104.000

Roberts, Marvin E., to Locking Systems, Inc. Settable key and coding mechanism therefor. 3,668,909, Cl. 70-411.000

Roberts, Rene Marie-Joseph: *See—*
Koleske, Joseph Victor; Roberts, Rene Marie-Joseph; and Del-Giudice, Frank Paul,3,670,045.
Roberts, Richard Walter, to Dixon-Bate, B., Limited. Strap tensioning devices. 3,668,743, Cl. 24-68.0ct
Robertshaw Controls Company: *See—*
Rattan, William D., 3,670,281.
Robertson, Daniel Stewart: *See—*
Hobden, Maurice Vernon; Rich, George Joseph; and Robertson, Daniel Stewart,3,670,186.
Robertson, H. H., Company: *See—*
Sharp, Merle F., 3,669,821.
Robinson, Charles A.; and Adams,Arthur C. Process for the preparation of sodium ampicillin. 3,669,957, Cl. 260-239.100
Robinson, David S., to Lear Siegler, Inc. Adjustable seat supporting assembly. 3,669,398, Cl. 248-373.000
Robinson, Frank: *See—*
Betts, Max William; and Robinson, Frank,3,668,896.
Betts, Max William; and Robinson, Frank,3,668,898.
Betts, Max William; and Robinson, Frank,3,668,901.
Robinson, Ray M., to Weyerhaeuser Company. Elongated article container. 3,669,336, Cl. 229-14.00c
Robinson, Robert E., to National Distillers and Chemical Corporation. Process for aromatic substitution. 3,670,034, Cl. 260-623.00h
Robinson, Robert J.: *See—*
Kun, Zoltan K.; and Robinson, Robert J.,3,670,220.
Rock, Thomas. Combined bag, seat and stool structure. 3,669,489, Cl. 297-217.000
Rodgers, Robert A.: *See—*
Derrickson, Charles, Jr.; and Rodgers, Robert A.,3,669,488.
Rodite, Robert R. R.: *See—*
Elmgren, Jarl A.; and Rodite, Robert R. R.,3,669,871.
Rodwin, Stephen Anthony, to Dominion Engineering Works, Limited. Integrated drying processes and apparatus. 3,668,785, Cl. 34-14.000
Roesch, Kurt Fritz: *See—*
Harker, Royce Kenneth; Prickett, Warren Wilson; and Roesch, Kurt Fritz,3,669,323.
Roessing Bronze Company: *See—*
Barbour, Alfred R., 3,669,647.
Rogaar, Harm P.: *See—*
Desgurse, Paul J. A.; and Rogaar, Harm P.,3,669,940.
Rohm & Haas Company: *See—*
Jones, Wilford Donald; Baldino, James Peter; and Melamed, Sidney, 3,670,068.
Rohrborn, Hans-Joachim. Production of barium hydroxide. 3,669,625, Cl. 23-186.000
Rohweder, Gerald D.; and Windish, Willis E., to Caterpillar Tractor Company. Retraction spring for clutches, brakes and like devices. 3,669,232, Cl. 192-85.00a
Roidt, Robert M., to Westinghouse Electric Corporation. Compressed-gas circuit interrupter having a pair of rapid transfer insulating nozzles. 3,670,126, Cl. 200-148.
Rolland, Albert, S.A.: *See—*
Thuillier, Yvonne, 3,669,846.
Rollfinke, Fred J.: *See—*
Peters, John E.; and Rollfinke, Fred J.,3,669,634.
Romanelli, Michael G., to Esso Research and Engineering Company. Preparation of unsaturated ethers. 3,670,029, Cl. 260-612.00d
Romanelli, Michael G., to Esso Research and Engineering Company. Preparation of unsaturated alcohols and ethers. 3,670,032, Cl. 260-614.0aa
Romeo, Albert J.: *See—*
Breslin, Mary Anne; Cogar, George R.; Lee, Charles A.; Neddenriep, Donald O.; Romeo, Albert J.; Sevilla, Ernesto G.; and Sekse, Torkjell,3,670,144.
Romeo, Vincent P., to USM Corporation. Machines for sequencing electronic components. 3,669,309, Cl. 221-225.000
Romero, Addie B., to Lee, Raymond, Organization, The. Convertible sofa bed. 3,668,719, Cl. 5-17.000
Romhild, Peter; and Herpfer, Eugen, to Dornier System GmbH. Jet-propelled aircraft having vertical and horizontal flight properties. 3,669,371, Cl. 244-7.00a
Ronayne, Ronald J.; and Ketterling, Edwin, to White Farm Equipment Company. Power take-off control valve. 3,669,229, Cl. 192-12.00c
Ronk Electrical Industries, Inc.: *See—*
Ronk, Leroy B., 3,670,238.
Ronk, Leroy B., to Ronk Electrical Industries, Inc. Rotary dynamoelectric machine having high- resistance rotor. 3,670,238, Cl. 321-55.000
Roome, Douglas P.: *See—*
Parvin, Allan I.; and Roome, Douglas P.,3,668,820.
Rooney, James J.; and Walach, Augustyn Z., to International Business Machines Corporation. Active filter capacitor for power supply switching regulators. 3,670,230, Cl. 321-10.
Rorer, William H., Inc.: *See—*
Diamond Julius, 3,669,971.
Rose, Louis: *See—*
Barough, Victor; Glenn, Robert; and Rose, Louis,3,669,019.
Rosenthal, Arnold Joseph: *See—*
Epstein, Martin Eden; Rosenthal, Arnold Joseph; and Santangelo, Joseph Germano,3,669,934.
Rosin, Seymour, to Harris-Intertype Corporation. Optical character spacing system for phototypesetting. 3,668,984, Cl. 95-4.500
Roslonski, Donald J., to Frost-A-Glass Corporation. Device for frosting drinking glasses. 3,668,888, Cl. 62-373.000
Rospatch Corporation: *See—*
Larson, Melvin E., 3,668,823.
Ross, Edward E., to Del Monte Corporation. Method and apparatus for orienting articles. 3,669,240, Cl. 198-31.0aa
Rossel, Joseph. Property safe. 3,669,037, Cl. 109-49.000
Roth, Paul W.: *See—*
Dunnahoe, Richard G.; Bondahl, Gary B.; and Roth, Paul W.,3,669,741.
Rothenborg Specialmaskiner for Sy-Industrien A/S: *See—*
Hedegaard, Arne Marius, 3,669,047.
Rothery, John L.: *See—*
Fougere, Guy L.; Rothery, John L.; and Miller, Raymond H.,3,670,243.
Rothman, Lawrence J.: *See—*
Klein, Donald L.; Mac Intyre, Michael W.; and Rothman, Lawrence J.,3,669,669.
Rousselot, Felix: *See—*
Marand, Jean; and Rousselot, Felix,3,669,313.
Rowland-Hill, Edward William, to Sperry Rand Corporation. Axial flow threshing and separating means with a load distributing threshing rotor. 3,669,121, Cl. 130-27.00t
Rowland-Hill, Edward William, to Sperry Rand Corporation. Axial flow combine with a rotary discharge. 3,669,122, Cl. 130-277.
Rowland-Hill, Edward William; and McCarty, Horace G., to Sperry Rand Corporation. Tailings return discharge for axial flow combines. 3,669,125, Cl. 130-27.
Rubin, Bruce J.: *See—*
Wright, John F.; and Rubin, Bruce J.,3,669,885.
Rudden, James B.: *See—*
Siklos, Gregory,; and Rudden, James B.,3,670,302.
Ruddick, Howard G.: *See—*
Hamrick, James C.; and Ruddick, Howard G.,3,669,087.
Ruddy, Donald C., to Singer Company, The. Meter tangents. 3,668,929, Cl. 73-281.000
Ruegg, Rudolf: *See—*
Gloor, Urs; Ruegg, Rudolf; and Ulrich, Schwieter,3,670,031.
Ruff, John D.; and Wheeler, Phillip R. Centrifugal heat pump with overload protection. 3,668,883, Cl. 62-158.000
Rumery, Jerome: *See—*
Gentry, Charles B.; Scanlon, Robert M.; Rumery, Jerome; McDonald, Howard L.; and Keeler, Larry G.,3,668,910.
Rupprecht, Charles F.; and Wiker, Frank, 1/2 to Binswanger Glass Co., and 1/2 to Piper Precision Dies, Inc. Glass handling and cutting system. 3,668,955, Cl. 83-6.000
Rushton, Brian M.: *See—*
Annand, Robert R.; Redmore, Derek; and Rushton, Brian M.,3,669,612.
Russell, Edward J.: *See—*
Brown, Gaylord W.; Russell, Edward J.; Howe, Charles E.; and Schnepp, Bradley A.,3,669,594.
Russell, Lewis K.: *See—*
Kleitman, David; Russell, Lewis K.; and Grebene, Alan B.,3,669,666.
Russenberger, Max E.: *See—*
Allgower, Martin; Perren, Stefan; and Russenberger, Max E.,3,668,972.
Russin, Nicholas C.: *See—*
Droke, Joseph W.; Hataway, James E.; and Russin, Nicholas C.,3,669,921.
Russo, Robert V.: *See—*
Castner, Claire J.; Russo, Robert V.; and Berard, Raymond A.,3,670,050.
Ruszczyk, James F.; and Secrist, Duane R., to International Business Machines Corporation. Air bearing magnetic head with glass slider body. 3,670,112, Cl. 179-100.20p
Rutenberg, Morton W.: *See—*
Tessler, Martin M.; and Rutenberg, Morton W.,3,669,890.
Ryan, John A.: *See—*
Turpin, Charles Henry; and Ryan, John A.,3,668,981.
Rymel Corporation: *See—*
Melges, Frederick J., 3,669,115.
Sabatino, Anthony: *See—*
Buttke, Richard A.; Sabatino, Anthony; Orlando, Daniel; and Behrens, William H.,3,668,761.
Saeki, Haruji, to Shionogi & Co., Ltd. Apparatus for chamfering tablets. 3,668,751, Cl. 29-76.000
S.A.E.S. Getters S.p.A.: *See—*
Porta, Paolo Della; and Rabusin, Elio, 3,669,567.
Sager, Thomas B.: *See—*
Deans, Howard; and Sager, Thomas B.,3,669,780.
said Kallenowski, Peter: *See—*
Keller, Wilhelm; Kallenowski, Peter; and Schmidt, Peter, 3,669,603.
said Keller, Wilhelm: *See—*
Keller, Wilhelm; Kallenowski, Peter; and Schmidt, Peter, 3,669,603.
Sair, Louis; and Melcer, Irving, to Griffith Laboratories, Inc., The. Method of making proteinaceous soy composition having reduced micro-organism count. 3,669,677, Cl. 99-17.000
Saito, Ichiro: *See—*
Saito, Kazuo; Tanaka, Takeshi; and Saito, Ichiro,3,670,052.

Saito, Kazuo; Tanaka, Takeshi; and Saito, Ichiro, to Kanegafuchi Chemical Industry Company Limited. Thermoplastic vinyl resin compositions, and method of manufacture. 3,670,052, Cl. 260-876.00r

Saito, Nagao; and Kobayashi, Kazuhiko, to Mitsubishi Denki Kabushiki Kaisha. Electric discharge machining method and apparatus. 3,670,136, Cl. 219-69.

Sakai, Masato: *See*—
Komatsu, Koei; Okuya, Eitaro; Tomioka, Katsuyoshi; Sakai, Masato; Hayashi, Shigeki; Yasunaga, Hidetoshi; and Kogure, Akira,3,669,943.

Sakakibara, Naoji, to Aisin Seiki Kabushiki Kaisha. Switching circuit for electrical devices of motor vehicles. 3,670,174, Cl. 307-10.00r

Sakamoti, Kenro: *See*—
Iwama, Masakuni; Inoue, Isaburo; Hanzawa, Teruo; Sakamoti, Kenro; and Endo, Takaya,3,669,671.

Sakamoto, Tetsuzo; and Torii, Akiomi, to Tokyo Shibaura Denki Kabushiki Kaisha, a/k/a Tokyo Shibaura Electric Co., Ltd. Control system for steam turbines. 3,669,559, Cl. 415-10.

Saklikar, Arvind R.: *See*—
Savit, Joseph; Guzik, Rudolph P.; Wayne, Harry A.; Saklikar, Arvind R.; and Van Eck, Jack M.,3,669,073.

Sakomura, Toshio; Shimizu, Akihiko; Kino, Takayuki; and Kita, Atsushi, to Toyo Soda Manufacturing Co., Ltd. Process for producing chloroprene copolymer. 3,669,944, Cl. 260-82.100

Sakurai, Shigeharu: *See*—
Fukazawa, Yoshiaki; Iwata, Yoshitaka; and Sakurai, Shigeharu,3,669,797.

Salk Institute for Biological Studies, The: *See*—
Ferris, James P., 3,670,007.

Salman, Naif D.: *See*—
Motley, David M.; and Salman, Naif D.,3,669,511.

Salzman, Otto; and Salzman, Paul. Fastener for ski boots and the like footwear. 3,668,791, Cl. 36-50.000

Salzman, Paul: *See*—
Salzman, Otto; and Salzman, Paul,3,668,791.

Sampson, Gerald A.: *See*—
Schieven, Stanley R.; and Sampson, Gerald A.,3,669,448.

Sanchez, Anastacio V. Clamp. 3,669,439, Cl. 269-130.000

Sandberg, Kjell T-son: *See*—
Hagdorn, Manfred Otto; and Sandberg, Kjell T-son,3,668,974.

Sander, Otto; and Ulpe, Alexander, to Mannesman Aktiengesellschaft. Offshore terminal. 3,668,875, Cl. 61-46.000

Sanders, Charles J. Cylinder, sinkers, needle. 3,668,902, Cl. 66-54.

Sanders, James F.: *See*—
Donnelly, Charles A.; and Sanders, James F.,3,669,707.

Sanders, James F.; Baumgartner, Ronald R.; and Farago, Laszlo D., to Minnesota Mining and Manufacturing Company. Fusing process and device. 3,669,706, Cl. 117-21.000

Sanders, Robert N.; and Johnston, James D., to Ethyl Corporation. Minerals separation process. 3,669,266, Cl. 209-166.000

Sanderson, Gary Warner: *See*—
Gurkin, Martin; Sanderson, Gary Warner; and Studer, Victor Vernon,3,669,680.

Sandifer, Cecil W.: *See*—
Hardy, Richard W.; Knowlen, Robert B.; Sandifer, Cecil W.; and Plake, William C.,3,670,164.

Sangamo Electric Company: *See*—
Blase, Emil F., 3,670,210.

Sankyo Kogaku Kogyo Kabushiki Kaisha: *See*—
Nozawa, Yoshikuni; Ishikawa, Mitsuo; and Kikuchi, Junjiro, 3,669,457.

Sano, Takezo: *See*—
Nakaguchi, Kohei; Nishikida, Tomozumi; Kawasumi, Shohachi; Maemoto, Kenichi; Sano, Takezo; Fujii, Yoshikazu; Harada, Koichi; and Ueda, Keijyu,3,669,945.

Sansbury, Larry: *See*—
Beuk, Ljubomir; Dogadko, Peter; and Sansbury, Larry,3,669,086.

Sansui Electric Co., Ltd.: *See*—
Kikuchi, Takeo; and Hashino, Hisaaki, 3,669,215.

Santangelo, Joseph Germano: *See*—
Epstein, Martin Eden; Rosenthal, Arnold Joseph; and Santangelo, Joseph Germano,3,669,934.

Sanz, Manuel, to Micromedic Systems, Inc., mesne. Metering cum dispensing apparatus. 3,669,319, Cl. 222-309.

Saparov, Valentin Vasilievich: *See*—
Juzvuk, Diomid Ilich; and Saparov, Valentin Vasilievich,3,669,889.

Sarsten, Jan A.; Zacks, Kenneth I.; and Myers, Michael C., to Esso Research and Engineering Company. Refrigeration inventory control. 3,668,882, Cl. 62-77.000

Saruya, Kichitaro: *See*—
Fukawa, Mitsunosuke; Oishi, Haruo; Saruya, Kichitaro; Nagai, Akira; and Nagai, Yoshitaro,3,669,766.

Sashino, Shozzo: *See*—
Oishi, Asao; and Sashino, Shozzo,3,669,560.

Sasso, Giovanni: *See*—
Middelhoek, Simon; and Sasso, Giovanni,3,669,732.

Sato, Jack, to SCM Corporation. Reclamation of copper from copper-clad steel. 3,669,644, Cl. 75-0.50b

Sato, Nobuyasu; Nakamura, Toshio; and Takenaka, Hiroshi, to Sumitomo Chemical Company, Ltd. Salts of indole derivatives and a process for preparing the same. 3,669,987, Cl. 260-326.13a

Sato, Yoshito: *See*—
Hori, Kikuo; and Sato, Yoshito,3,669,373.

Sauerwein, Kurt; and Goedecke, Hans. Apparatus for giving medical treatment by irradiation from radioactive substances. 3,669,093, Cl. 128-1.100

Saunders, William C. Collapsible stand-up tray holder. 3,669,392, Cl. 248-121.

Savage, James R.: *See*—
Hokanson, Lyle W.; Savage, James R.; Smith, E. Peter; Levangie, Gilbert; and Klaas, William,3,669,196.

Savides, Savas P. Pocket noise making and alarm device. 3,670,321, Cl. 340-384.000

Savit, Joseph; Guzik, Rudolph P.; Wayne, Harry A.; Saklikar, Arvind R.; and Van Eck, Jack M., to American Photocopy Equipment Company. Electrostatic developing system. 3,669,073, Cl. 118-637.000

Savory, Anthony James, to Lucas, Joseph, (Industries) Limited. Apparatus for hot runner injection moulding. 3,669,596, Cl. 18-30.

Scaddan, Ernest Victor: *See*—
Micklewright, Percy Leonard; and Scaddan, Ernest Victor,3,668,763.

Scaggs, Lee E.: *See*—
Sloane, Edwin A.; and Scaggs, Lee E.,3,670,326.

Scanlon, Robert M.: *See*—
Gentry, Charles B.; Scanlon, Robert M.; Rumery, Jerome; McDonald, Howard L.; and Keeler, Larry G.,3,668,910.

Schabacher, Werner: *See*—
Schulze, Manfred; and Schabacher, Werner,3,669,621.

Schaefer, Frederic Charles, to American Cyanamid Company. Continuous high temperature process for O- methylpseudourea hydrochloride. 3,670,022, Cl. 260-564.00e

Schaeffler, Otto S., to United States of America, Interior, mesne. Process for producing semipermeable membranes. 3,669,954, Cl. 260-230.00r

Schaeren, Sidney Frank, to Hoffmann-La Roche Inc. Process for the preparation of 4-methyl-5- alkoxy-oxazoles. 3,669,984, Cl. 260-307.00r

Schafetter, Donald L.: *See*—
Hackett, William H., Jr.; Schafetter, Donald L.; and Varnerin, Lawrence J., Jr.,3,669,767.

Scharmann, Garred N.; Warn, Kermit W.; and Mortensen, Donald G., to Wayne Manufacturing Company. Road sweeper conveyor. 3,668,730, Cl. 15-83.000

Schauls, James J., to Trane Company, The. Distributor for plate type heat exchangers having end headers. 3,669,186, Cl. 165-166.

Scheffel, Kenneth G.: *See*—
Segel, Edward; and Scheffel, Kenneth G.,3,669,000.

Scheibel, Josef: *See*—
Hofmann, Erich; Krull, Ernst; Johannsen, Werner Hans; Oberheim, Robert; and Scheibel, Josef,3,669,534.

Schering Corporation: *See*—
Mallams, Alan K., 3,669,952.
Mallams, Alan K., 3,669,953.

Schieven, Stanley R.; and Sampson, Gerald A., to Eastman Kodak Company. Sheet feeding and stacking apparatus. 3,669,448, Cl. 271-64.000

Schiffmann, Robert F.: *See*—
Kaufman, Harold B., Jr.; Schiffmann, Robert F.; and Stein, Ernest W.,3,670,132.

Schilling, Paul, to Crown Zellerbach Corporation. Container having mutli-ply bottom and upright walls. 3,669,339, Cl. 229-23.00a

Schindel, Arnold; and Coyle, Vincent E., to Singer Company, The, mesne. Synchronized electromagnetic clutch. 3,669,231, Cl. 192-53.00d

Schirtzinger, Joseph F., to Air Logistics Corporation. Method and apparatus for preventing ice damage to marine structures. 3,669,052, Cl. 114-0.50r

Schjeldahl, G. T., Company: *See*—
Smith, Ernset L.; Duffy, Arthur R.; and Lyman, Eugene S., 3,669,816.

Schlieckmann, Alfred: *See*—
Zippel, Bernd; and Schlieckmann, Alfred,3,669,595.

Schlitz, Jos., Brewing Company: *See*—
Pagdin, William Gordon; Smith, Walter I.; Smith, Wayne A.; and Le Tendre, Eugene F., 3,669,244.

Schlotzhauer, Allan T.: *See*—
Newman, Douglas A.; and Schlotzhauer, Allan T.,3,669,713.

Schlumberger Technology Corporation: *See*—
Vermette, Clifford, 3,670,185.

Schlumbom, Peter Christoph: *See*—
Regenass, Franz; Schlumbom, Peter Christoph; and Heller, Hansjorg,3,669,936.

Schlunke, Jurgen, to Joh. Kleinewefers Sohne. Apparatus for continuously humidifying moving webs of paper, fabric, or other materials. 3,668,905, Cl. 68-5.00d

Schmalbach-Lubeca-Werke Aktiengesellschaft: *See*—
Richter, Wolfgang Max Egon; Lab, Edgar; and Sieblist, Hans Werner, 3,668,959.

Schmid, Leopold F. Synchronous universal coupling. 3,668,893, Cl. 64-21.000

Schmidt, Adrian J.: *See*—
Silver, Robert L.; and Schmidt, Adrian J.,3,669,298.

Schmidt, Donald R. Portable work stand cabinet and illumination source unit. 3,670,156, Cl. 240-2.000

Schmidt, Ferenc J., to General Electric Company. Complexly shaped articles formed by deposition processes. 3,669,849, Cl. 204-11.000

Schmidt, Gunter-Karl, to Licentia Patent-Verwaltungs-G.m.b.H. Tape recorder reeling control device. 3,669,381, Cl. 242-182.000

Schmidt, Hans-Joachim: *See—*
Fernholz, Hans; Schmidt, Hans-Joachim; and Wunder, Friedrich,3,670,014.

Schmidt, Peter J.: *See—*
Walchle, David L.; and Schmidt, Peter J.,3,670,071.
Keller, Wilhelm; Kallenowski, Peter; and Schmidt, Peter,3,669,603.

Schmiege, Lester C.; and Zeluff, Wendell C., to American Wire Cloth Company. Welding equipment. 3,670,138, Cl. 219-114.000

Schmitt, Karl, to GEHAP Gesellschaft fuer Handel und Patenverwertung m.b.H & Co. KG. Tuning fork stabilized transistor drive for time pieces. 3,670,265, Cl. 331-116.00m

Schmitt, William C., to Milwaukee Faucets, Inc. Faucet mounting means. 3,669,141, Cl. 137-359.

Schmuck, Fredric E.: *See—*
Schoepe, Adolf; and Schmuck, Fredric E.,3,669,138.

Schneerman, John F.: *See—*
Fairaizl, Max L.; and Schneerman, John F.,3,668,734.

Schneider, Adolf: *See—*
Thevis, Paul; Schneider, Adolf; and Jakubaschk, Horst,3,669,348.

Schneider, Jos., & Co.: *See—*
Bardutzky, Klaus, 3,668,995.

Schneider, Klaus: *See—*
Schneider, Wolfgang; and Schneider, Klaus,3,669,597.

Schneider, Wolfgang; and Schneider, Klaus. Apparatus for the production of small concrete elements. 3,669,597, Cl. 425-216.

Schneill, Hermann: *See—*
Krimm, Heinrich; Botta, Artur; and Schneill, Hermann,3,670,024.

Schnepp, Bradley A.: *See—*
Brown, Gaylord W.; Russell, Edward J.; Howe, Charles E.; and Schnepp, Bradley A.,3,669,594.

Schober, Horst A.: *See—*
Hoppmann, Kurt H.; and Schober, Horst A.,3,669,260.

Schoch, Thomas J.; and Sloan, Jerry L., to Lamb-Weston, Inc. Method of heat tempering potatoes prior to futher processing. 3,669,686, Cl. 99-103.000

Schoepe, Adolf; and Schmuck, Fredric E. Ball cock construction including horizontal inlet mounting and anti-syphon device. 3,669,138, Cl. 137-218.000

Scholz, Gunter, to Gebruder Junghans G.m.b.H. Timepiece showing the date and day of the week. 3,668,862, Cl. 58-58.000

Schoree, Gustav: *See—*
Borck, Joachim; Dahm, Johann; Koppe, Volker; Kramer, Josef; Schoree, Gustav; Hovy, Jan Willem Herman; and Schorscher, Ernst,3,669,973.

Schorr, Herbert: *See—*
Amdahl, Gene M.; Arnold, Richard F.; Dauber, Philip S.; Freiman, Charles V.; Robelen, Russell J.; Schorr, Herbert; and Wierzbicki, John R.,3,670,309.

Schorre, Gustav: *See—*
Borck, Joachim; Dahm, Johann; Koppe, Volker; Kramer, Josef; Schorre, Gustav; Hovy, Jan Willem; and Schorscher, Ernst,3,669,972.

Schorscher, Ernst: *See—*
Borck, Joachim; Dahm, Johann; Koppe, Volker; Kramer, Josef; Shorre, Gustav; Hovy, J. W. Hermann; and Schorscher, Ernst,3,669,956.
Borck, Joachim; Dahm, Johann; Koppe, Volker; Kramer, Josef; Schorre, Gustav; Hovy, Jan Willem; and Schorscher, Ernst,3,669,972.
Borck, Joachim; Dahm, Johann; Koppe, Volker; Kramer, Josef; Schoree, Gustav; Hovy, Jan Willem Herman; and Schorscher, Ernst,3,669,973.

Schrader, Preston H., to Rex Chainbelt Inc. Plane omidirectional absorber. 3,668,939, Cl. 74-61.000

Schrading, Mark S.; and Winters, Terry L., to Kimberly-Clark Corporation. Surgical drape with adhesive attachment means. 3,669,106, Cl. 128-132.

Schrewe, Hans, to Mannesmann Aktiengesellschaft. Pouring apparatus with submerged deflector plates for continuous casting. 3,669,181, Cl. 164-281.000

Schrijvers, Jozef: *See—*
De Boeck, Paul; Marteel, Bernard; and Schrijvers, Jozef,3,669,833.

Schrillo Company: *See—*
Wysong, Paul V., 3,669,460.

Schroder, Rolf: *See—*
Engelsmann, Dieter; and Schroder, Rolf,3,668,988.

Schroetter, Hermann: *See—*
Hoelzinger, Walther J.; Wenninger, Johann; Mayer, Walter; Zoegernitz, Karl; Schroetter, Hermann; and Braun, Werner,3,669,064.

Schubert & Salzer Maschinenfabrik Aktiengesellschaft: *See—*
Hubel, Egon; and Hoeber, Gerhard, 3,670,237.

Schueler, George Berthold Edward, to Redland Bricks Limited. Process for the production of sheets hardenable to form molded articles. 3,670,063, Cl. 264-115.000

Schulz, Helga: *See—*
Mager, Elisabeth; Schulz, Helga; and Schulz, Peter,3,669,112.

Schulz, Peter: *See—*
Mager, Elisabeth; Schulz, Helga; and Schulz, Peter,3,669,112.

Schulze, Ernst: *See—*
Hoehn, Hans; and Schulze, Ernst,3,669,950.

Schulze, Kurt-Jurgen; and Jung, Joachim, to Glanzstoff AG. Patenting of steel wires with lead. 3,669,761, Cl. 148-15.000

Schulze, Manfred; and Schabacher, Werner, to Farbenfabriken Bayer Aktiengesellschaft. Process for producing a substantially phosphate ion-free ammonium fluoride solution. 3,669,621, Cl. 23-88.000

Schuster, Donald R., to Westinghouse Electric Corporation. U-shaped clip nut. 3,669,170, Cl. 151-41.750

Schwartz, Paul. Metal studding and adjustable shelf carrier. 3,668,827, Cl. 52-36.000

Schwartz, Walter M., Jr.: *See—*
Eaton, John L., Jr.; Richard, Kenneth L.; and Schwartz, Walter M., Jr.,3,669,004.

Schwegman, Harry E.: *See—*
Sizer, Phillip S.; and Schwegman, Harry E.,3,669,190.

Schworer, Emil, to Apparatebau Aktiengesellschaft. Double combustion firing. 3,669,041, Cl. 110-18.

SCM Corporation: *See—*
Hall, Roger P.; Pratt, Ivor; and Young, Richard A., 3,669,796.
Hall, Roger P., 3,669,825.
Raymond, Douglas G., 3,669,727.
Sato, Jack, 3,669,644.

Scott, Kenneth N. Data strip copying attachment for a photocopying machine. 3,669,536, Cl. 355-40.000

Scott, Ray A.: *See—*
Sorenson, Billy L.; and Scott, Ray A.,3,669,175.

Scripto, Inc.: *See—*
Fuller, David L., 3,669,527.

Seabury, William A., III. Modular matrix with plug interconnection. 3,670,207, Cl. 317-101.

Secrist, Duane R.: *See—*
Ruszczyk, James F.; and Secrist, Duane R.,3,670,112.

Sefried, Harry H., II, to Sturm, Ruger & Co., Inc. Rifle bolt with a removably secured stabilizing lug thereon. 3,668,800, Cl. 42-16.000

Segel, Edward; and Scheffel, Kenneth G., 50% to Dow Chemical Company, The, and 50% to Miles Laboratories, Inc. Cellulose ether foam stabilizers for malt beverages. 3,669,000, Cl. 99-48.000

Seharada, Saburo: *See—*
Takamura, Akira; Kunii, Kazushi; Seharada, Saburo; and Nakatani, Hiroshi,3,669,222.

Sehman, Bengt Allan: *See—*
Boksjo, Carl Ingvar; and Sehman, Bengt Allan,3,670,217.

Seidel, Joseph: *See—*
Foster, Karl; and Seidel, Joseph,3,670,278.

Seidel, Ulrich: *See—*
Belart, Juan; and Seidel, Ulrich,3,670,122.

Seiden, Paul, to Procter & Gamble Company, The. Purifying propylene glycol monoesters using vacuum distillation. 3,669,848, Cl. 203-94.000

Seiner, Jerome A., to PPG Industries, Inc. Method for providing opaque, microcellular, film coatings on substrates and the resultant product. 3,669,728, Cl. 117-161.0ua

Seiner, Jerome A., to PPG Industries, Inc. Method for producing articles having pigmented coatings with improved hiding ability and the resultant product. 3,669,729, Cl. 117-161.0ua

Sekse, Torkjell: *See—*
Breslin, Mary Anne; Cogar, George R.; Lee, Charles A.; Neddenriep, Donald O.; Romeo, Albert J.; Sevilla, Ernesto G.; and Sekse, Torkjell,3,670,144.

Sell, Darrell Dean, to Bell Telephone Laboratories, Incorporated. Optical spectrometer with transparent refracting chopper. 3,669,547, Cl. 356-93.000

Sellstedt, John H.: *See—*
Bogash, Richard; Wolf, Milton; and Sellstedt, John H.,3,669,980.

Semienko, Peter P.; and Toledo, Emil, to Honeywell, Inc. Apparatus for uniformly plating a continuous cylindrical substrate. 3,669,865, Cl. 204-206.000

Semplonius, Frans; and Kolk, Stephen B., to Steelcase Inc. Chair. 3,669,499, Cl. 297-455.000

Sen Ih, Charles Chung; and Lurie, Michael Jay, to RCA Corporation. Recording of a continuous tone focused image on a diffraction grating. 3,669,673, Cl. 96-38.300

Senge, Ferdinand; Weirauch, Kurt; and Bottenbruch, Ludwig, to Farbenfabriken Bayer Aktiengesellschaft. Carbonate containing copolymerisation products and process for their production. 3,670,051, Cl. 260-873.000

Sennari, Mutsuo; and Nakajima, Toshihiro, to Mitsubishi Petrochemical Company, Limited. Production of modified polypropylenes. 3,670,053, Cl. 260-878.000

Senninger, Farl J., to Senninger Irrigation, Inc. Sprinkler head apparatus. 3,669,356, Cl. 239-230.000

Senninger Irrigation, Inc.: *See—*
Senninger, Farl J., 3,669,356.

Serebrin, David, to Venture Enterprises, Inc. Wiglet attaching device. 3,669,129, Cl. 132-46.

Sergeev, Vyacheslav Mikhailovich: *See—*
Tsenter, Boris Ioselevich; Sergeev, Vyacheslav Mikhailovich; and Kloss, Alexandr Ilich,3,669,744.

Sesame, John Kraft, Corporation: *See—*
Kraft, John H., 3,669,678.

Setty, Richard D.: *See—*
Werner, Ben E.; and Setty, Richard D.,3,669,308.

Sevilla, Ernesto G.: *See—*
Breslin, Mary Anne; Cogar, George R.; Lee, Charles A.; Neddenriep, Donald O.; Romeo, Albert J.; Sevilla, Ernesto G.; and Sekse, Torkjell,3,670,144.

Shafter Concrete Pipe Co.: *See—*
Ogle, Robert K., 3,668,879.

Shaheen, Joseph M.; and Simone, John, to North American Rockwell Corporation. Method of making interstitial conductors between plated memory wires. 3,668,776, Cl. 29-604.

Shankar, Naranappa K.: *See—*
United States of America,National Aeronautics and Space Administration, Administrator, 3,670,202.

Sharp, David Harold. Liquid reservoir. 3,668,709, Cl. 4-28.

Sharp, Merle F., to Robertson, H. H., Company. Fiber-reinforced plastic structural member. 3,669,821, Cl. 161-127.000

Sharron, Paul A., to Profab Inc. Art frame assembly. 3,668,799, Cl. 40-152.100

Shastri, Shiri, to Virginia Chemicals Inc. Sodium hydrosulfite stabilization composition. 3,669,895, Cl. 252-188.000

Shaw, Alfred W.: *See—*
De La Mare, Harold E.; and Shaw, Alfred W.,3,670,054.

Shell Oil Company: *See—*
Coles, Roy D.; and Richardson, Edwin A., 3,669,188.
De La Mare, Harold E.; and Shaw, Alfred W., 3,670,054.
Desgurse, Paul J. A.; and Rogaar, Harm P., 3,669,940.
Mills, Walter D., 3,669,627.
Van Westrenen, William J.; De Carpentier, Pieter; and Nieuwenhuis, Willem H. M., 3,669,942.

Sheller-Globe Corporation: *See—*
Palmai, Robert, 3,669,144.

Sheng, Ming Nan; and Zajacek, John G., to Atlantic Richfield Company. Oxidation of thiols to thiol sulfonates and sulfonic acids. 3,670,002, Cl. 260-453.000

Shephard, Margaret Claire: *See—*
Freeman, Peter Frank Hilary; Shephard, Margaret Claire; and Snell, Brian Kenneth,3,670,077.

Shepherd, Lawrence H., Jr., to Ethyl Corporation. Organoaluminum halides and their preparation. 3,670,001, Cl. 260-448.00a

Shepherd, Lawrence H., Jr., to Ethyl Corporation. Chemical process. 3,670,038, Cl. 260-665.00r

Shepherd Lawrence H., Jr., to Ethyl Corporation. Heterocyclic organo-aluminum compounds and their preparation. 3,669,990, Cl. 260-340.600

Shepherd, Thomas H.: *See—*
de Long, Charles F.; and Shepherd, Thomas H.,3,669,691.

Shepherd, Thomas H.; and Gould, Francis E., to National Patent Development Corporation. Hydrophilic polymer containing aerosol. 3,670,073, Cl. 424-47.000

Sherain, Monroe B.: *See—*
Klug, Sigmund L.; Finkel, Gilbert; and Sherain, Monroe B.,3,669,674.

Sherwin-Williams Company, The: *See—*
Keyl, Alex C.; and Brodie, Mary G., 3,669,716.

Shiba, Keis uke; Ohi, Reiichi; and Shishido, Tadao, to Fuji Photo Film Co., Ltd. Super sensitized silver halide photographic emulsion. 3,669,672, Cl. 96-126.000

Shibai, Hiroshiro: *See—*
Niwa, Kunimori; Shibai, Hiroshiro; Yasunaga, Masahiro; Hirose, Yoshio; and Shiro, Teruo,3,669,844.

Shier, Wayne Thomas; Rinehart, Kenneth L., Jr.; and Gottlieb, David, to University of Illinois Foundation. Method of making antibiotics containing the aminocyclitol subunit. 3,669,838, Cl. 195-29.

Shima, Tsukasa: *See—*
Terasaki, Iwao; Kimura, Yoshio; Okamoto, Toshio; Shima, Tsukasa; Kohno, Mitsuo; and Kitamura, Kazuyuki,3,669,927.

Shimada, Michihiko: *See—*
Oishi, Masashi; Shimada, Michihiko; Nakayama, Yuji; Naito, Koichiro; and Okamoto, Kazuhiko,3,669,645.

Shimamura, Mutsuo: *See—*
Imai, Tomio; Shimamura, Mutsuo; Yoshitake, Juichi; and Ohiwa, Hitoshi,3,669,845.

Shimanckas, William J., to Outboard Marine Corporation. Inflatable transom sealing arrangement. 3,669,057, Cl. 115-34.00r

Shimanckas, William J., to Outboard Marine Corporation. No back steering for an outboard motor. 3,669,058, Cl. 115-18.00r

Shimauchi, Shiro; Yoshida, Saburo; and Muro, Koji, to Teijin Limited. Production of ornamental multitone effect on polyamide textile materials. 3,669,611, Cl. 8-14.000

Shimizu, Akihiko: *See—*
Sakomura, Toshio; Shimizu, Akihiko; Kino, Takayuki; and Kita, Atsushi,3,669,944.

Shimizu, Toshihide: *See—*
Koyanagi, Shunichi; Tajima, Shigenobu; Shimizu, Toshihide; and Kurimoto, Kazuhiko,3,669,946.

Shinetsu Chemical Company: *See—*
Koyanagi, Shunichi; Tajima, Shigenobu; Shimizu, Toshihide; and Kurimoto, Kazuhiko, 3,669,946.

Shinjo, Katsumi. Automatic nut-tapping apparatus. 3,668,726, Cl. 10-129.000

Shintani, Sotokichi; Kawai, Kazuo; and Yanagidaira, Hidetaka, to Kokusai Denshin Denwa Kabushiki Kaisha. System for demodulating an amplitude-modulated telegraphic wave or waves. 3,670,251, Cl. 329-109.000

Shintron Company, Inc.: *See—*
Baxter, Larry K.; and Asano, Shintaro, 3,670,103.

Shio, Megumu, to Nippon Kogaku K.K. Bright illuminator for microscopes. 3,669,524, Cl. 350-87.000

Shiobara, Masaji; and Watanabe, Genji, to Nissan Motor Company, Limited. Carburetor of variable-area venturi type. 3,669,424, Cl. 261-44.00r

Shionogi & Co., Ltd.: *See—*
Hirata, Masaharu, 3,670,080.
Saeki, Haruji, 3,668,751.
Watanabe, Yoshihachi; and Ogata, Masaru, 3,670,082.

Shirage, Yoshio: *See—*
Mori, Kunio; and Shirage, Yoshio,3,668,729.

Shiraiwa, Toshio; and Hiroshima, Tatsuo, to Sumitomo Metal Industries Limited. Method and apparatus for magnetic flaw detection by using magneto-sensitive diodes. 3,670,239, Cl. 324-37.000

Shiraki, Takashi: *See—*
Morita, Minoru; Shiraki, Takashi; and Masuoka, Sadao,3,668,775.

Shirashoji, Akira: *See—*
Kitaoka, Takashi; and Shirashoji, Akira,3,670,225.

Shiro, Teruo: *See—*
Niwa, Kunimori; Shibai, Hiroshiro; Yasunaga, Masahiro; Hirose, Yoshio; and Shiro, Teruo,3,669,844.

Shishido, Tadao: *See—*
Shiba, Keis uke; Ohi, Reiichi; and Shishido, Tadao,3,669,672.

Shoaf, Myron D.; Ketch, Frederick M.; and Wong, Thomas S., to General Foods Corporation. Shortening composition containing silicon dioxide and a bridging agent, and baked goods containing same. 3,669,681, Cl. 99-86.000

Shoda, Shichiro; Ito, Nobuo; and Miki, Toshiro, to Toagosei Chemical Industry Co., Ltd. Process for producing acrylic ester. 3,670,012, Cl. 260-486.0ac

Shoop, Vernon A.: *See—*
Bowser, George H.; Shoop, Vernon A.; Pyzewski, Stanley J.; Mazzoni, Renato J.; and Bologna, John P.,3,669,785.

Shorokhov, Leonid Pavlovich: *See—*
Budman, Moisei Izrailevich; Kaganovsky, Frederik Isaakovich; Kapitanov, Nikolai Ivanovich; Karzov, Jury Nikolaevich; Nadtochenko, Andrei Fedorovich; Slavetsky-Kotvitsky, Eduard Sebostyanovich; and Shorokhov, Leonid Pavlovich,3,668,921.

Shorre, Gustav: *See—*
Borck, Joachim; Dahm, Johann; Koppe, Volker; Kramer, Josef; Shorre, Gustav; Hovy, J. W. Hermann; and Schorscher, Ernst,3,669,956.

Shriver T., & Company, Inc.: *See—*
Hutton, William L., 3,669,267.

Shroff, James R.: *See—*
Elpern, Bill; and Shroff, James R.,3,669,974.

Shroff, Shrenik: *See—*
Vassiliades, Anthony E.; Nauman, Edward F.; and Shroff, Shrenik,3,669,899.

Shultz, Bernard R.: *See—*
Kaufmann, Morris; and Shultz, Bernard R.,3,669,757.

Siai-Marchetti S.p.A.: *See—*
Parenti, Giorgio, 3,669,136.

Sibley, Henry C., to General Signal Corporation. Combined high and low frequencies for track circuit. 3,670,161, Cl. 246-40.000

Siddall, John B.; and Calame, Jean Pierre. 11-Halo-10-oxo-3,7,11-trialkyl-2-alkenoic and 2,6- alkadienoic acids and esters thereof. 3,669,996, Cl. 260-408.000

Siddall, John B.: *See—*
Calame, Jean Pierre; and Siddall, John B.,3,669,997.

Sidhu, Mohanjit S.: *See—*
Landis, Donald E.; and Sidhu, Mohanjit S.,3,668,942.

Siebe Gorman & Company Limited: *See—*
Cheffers, Stanley John; and Glynn, Michael Harvey, 3,669,109.

Sieblist, Hans Werner: *See—*
Richter, Wolfgang Max Egon; Lab, Edgar; and Sieblist, Hans Werner,3,668,959.

Siegfried, Hansen, to Hughes Aircraft Company. Gravity gradient meter. 3,668,932, Cl. 73-382.000

Siemens Aktiengesellschaft: *See—*
Braumann, Gundokar; Klor, Walter; and Huber, Albert, 3,670,272.
Eger, Helmut, 3,668,774.
Krall, Heribert; Maag, Helmut; Herrmann, Otto; and Posl, Rudolf, 3,669,176.
Thum, Egon, 3,670,187.

Signetics Corporation: *See—*
Kleitman, David; Russell, Lewis K.; and Grebene, Alan B., 3,669,666.
Lensa, Andris; and Kirton, Lionel A., 3,669,431.

Signode Corporation: *See—*
Vilcins, Ilmar J.; and Frey, Robert J., 3,669,799.

Siklos, Gregory,; and Rudden, James B., to Marbelite Company, Inc. Central traffic signal control. 3,670,302, Cl. 340-40.000

Silver, Jules: *See—*
Zackheim, Eli A., 3,669,310.

Silver, Robert L.; and Schmidt, Adrian J., to Triple E Corporation. Material handling box. 3,669,298, Cl. 220-4.00e

Silverberg, Carl G., to American Optical Corporation. All-ceramic glass making system. 3,669,435, Cl. 263-40.00r

Silverman, Daniel. Method and apparatus for everting a flexible probe into a cavity. 3,669,099, Cl. 128-2.000

Simone, John: *See—*
Shaheen, Joseph M.; and Simone, John,3,668,776.

Simpson Timber Company: *See—*
Calusen, Victor H.; and Zweig, Arnold, 3,669,804.
Jarvis, Richard L.; Kully, Walter; Calusen, Victor H.; Zweig, Arnold; and Engvoll, Sverre, 3,669,803.
Leman, Marvin J., 3,669,039.
Leman, Marvin J., 3,669,502.

Sinclair, William Robert: *See—*
Peters, Frank Groom; Sinclair, William Robert; and Sullivan, Miles Vincent,3,669,863.

Singer Company, The: *See—*
Adams, Kenneth D.; and Odermann, Charles R., 3,669,044.
Adams, Kenneth D., 3,669,050.
Anderson, Robert J., 3,669,522.
Barnes, Robert L.; and Grafstein, Daniel, 3,669,993.
Batson, William A.; and Fromknecht, Charles T., 3,668,842.
Cowdrey, Roy M., 3,668,780.
Michcon, Lester; and Reagan, Donald W., 3,668,897.
Ruddy, Donald C., 3,668,929.
Schindel, Arnold; and Coyle, Vincent E., 3,669,231.
Van Namen, Frederik Tjado, 3,669,444.
Wilton, Raymond C., 3,668,790.

Sinizer, David I.; Toy, Albert; Atteridge, David G.; and Fanelli, Louis H., to North American Rockwell Corporation. Stress-oriented filament winding in composite panels. 3,669,364, Cl. 242-1.000

Sinn, Robert: *See—*
Copin, Robert; Sinn, Robert; and Bouilly, Charles,3,669,641.

Sira Institute: *See—*
Dunn, Geoffrey Bernard; and York, Leonard Ernest, 3,669,048.

Sircom, Richard Cumming, to Eastech Limited. Protection against electrical shock. 3,670,206, Cl. 317-18.00d

Sixt, Marty E.: *See—*
Martin, Ronald C.; and Sixt, Marty E.,3,669,473.

Sizer, Phillip S.; and Schwegman, Harry E., to Otis Engineering Corporation. Methods of completeing a well. 3,669,190, Cl. 166-315.000

Skarvinko, Eugene R., to International Business Machines Corporation. Preventing speed loss in oxygen sensitive photo-resist layers. 3,669,667, Cl. 96-68.000

SKF Kugellagerfabriken G.m.b.H.: *See—*
Kohler, Gisbert, 3,669,518.

Skinner Precision Industries, Inc.: *See—*
Ellison, John E., 3,670,274.

Skyway Luggage Company: *See—*
Kotkins, Henry L., 3,669,228.

Slavetsky-Kotvitsky, Eduard Sebostyanovich: *See—*
Budman, Moisei Izrailevich; Kaganovsky, Frederik Isaakovich; Kapitanov, Nikolai Ivanovich; Karzov, Jury Nikolaevich; Nadtochenko, Andrei Fedorovich; Slavetsky-Kotvitsky, Eduard Sebostyanovich; and Shorokhov, Leonid Pavlovich,3,668,921.

Slavin, Michael; and Carp, Ralph W., to Bendix Corporation, The. Hydraulic pressure modulator for use in adaptive braking systems. 3,669,403, Cl. 351-30.

Slechta, Alfred F.; Culp, Gordon L.; and Dunnahoe, Richard G., to Neptune Microfloc, Incorporated. Method and apparatus for cleaning settling tube modules. 3,669,742, Cl. 134-23.000

Sloan, Jerry L.: *See—*
Schoch, Thomas J.; and Sloan, Jerry L.,3,669,686.

Sloan Valve Company: *See—*
Billeter, Henry R., 3,669,224.

Sloane, Edwin A.; and Scaggs, Lee E., to Time/Data Corporation. Digital to log-analog converter. 3,670,326, Cl. 340-347.0da

Smart, Raymond C., to United Aircraft Corporation. Reactor seal. 3,669,065, Cl. 118-48.000

Smith, Burton H., to Raytheon Company. Helix delay line for traveling wave devices. 3,670,196, Cl. 315-3.500

Smith, Carl E., to Xerox Corporation. Adhesive applicator. 3,669,066, Cl. 118-50.100

Smith, Donald A.: *See—*
Kantorski, Joseph W.; La Marre, David A.; and Smith, Donald A.,3,670,263.

Smith, Donald L., to Caterpillar Tractor Company. Braking circuit with fluid pressure control valve. 3,669,513, Cl. 303-50.000

Smith, E. Peter: *See—*
Hokanson, Lyle W.; Savage, James R.; Smith, E. Peter; Levangie, Gilbert; and Klaas, William,3,669,196.

Smith, Ernset L.; Duffy, Arthur R.; and Lyman, Eugene S., to Schjeldahl, G. T., Company. Lining for cryogenic tank. 3,669,816, Cl. 161-38.

Smith, Joseph E., to Wolverine-Pentronix, Inc. Die and punch assembly for compacting powder material having deflection compensator. 3,669,582, Cl. 18-16.

Smith, Peter D.; and Kletecka, George, to Goodrich, B. F., Company, The. Process for the preparation of hydroxybenzyl- substituted isocyanurates. 3,669,962, Cl. 260-248.0ns

Smith, Richard L., to Kaiser Aluminum & Chemical Corporation. Control of integral color anodizing process. 3,669,855, Cl. 204-58.

Smith, Walter I.: *See—*
Pagdin, William Gordon; Smith, Walter I.; Smith, Wayne A.; and Le Tendre, Eugene F.,3,669,244.

Smith, Wayne A.: *See—*
Pagdin, William Gordon; Smith, Walter I.; Smith, Wayne A.; and Le Tendre, Eugene F.,3,669,244.

Smith, Wayne H. Livestock treater. 3,669,078, Cl. 119-157.

Snam Progetti S.p.A.: *See—*
Fermi, Enzo; and Francesco, San Donaio Milanese, 3,669,591.

Snell, Brian Kenneth: *See—*
Freeman, Peter Frank Hilary; Shephard, Margaret Claire; and Snell, Brian Kenneth,3,670,077.

Snia Viscosa Nazionale Industria Applicazioni Viscosa S.p.A.: *See—*
Ando, Satoshi; Tanaka, Yusaku; Kojima, Minoru; and Fujimura, Kyoichi, 3,669,917.

Snider, Theodore O.; and Teeple, Michael D., to National Automatic Tool Company, Inc. Hydro-mechanical clamp. 3,669,599, Cl. 425-242.

Sobel, Alan; and Markin, Joseph, to Zenith Radio Corporation. Image-display devices comprising particle light modulators with storage. 3,670,323, Cl. 340-324.00r

Sobel Industries: *See—*
Pfund, Adolph; and Sobel, Morton, 3,669,307.

Sobel, Morton: *See—*
Pfund, Adolph; and Sobel, Morton,3,669,307.

Societa Applicazioni Gomma Antivibranti 'SAGA' S.p.A.:*See—*
Brizzolesi, Gustavo, 3,668,891.

Societa' Italiana Resine S.p.A.:*See—*
Ackermann, Jacob; Croce, Roberto; and Reguzzoni, Riccardo, 3,670,016.

Societa Italiana Telecommunicazioni Siemens S.p.A.: *See—*
De Nicolay, Giuliano; and Venturini, Piero, 3,670,255.

Societe Alsacienne de Constructions Mecaniques de Mulhouse: *See—*
Le Chatelier, Jacques, 3,668,854.

Societe Anonyme dite: Aquitaine-Organico: *See—*
Colin, Roger, 3,669,166.

Societe Anonyme dite: Etablissements Jacques Berthelat & Fils: *See—*
Berthelat, Robert J., 3,669,242.

Societe Anonyme Poclain: *See—*
Gauchet, Yves M., 3,669,286.

Societe Chimique des Charbonnages: *See—*
Copin, Robert; Sinn, Robert; and Bouilly, Charles, 3,669,641.

Societe des Procedes Modernes d'Injection Modernes SOPROMI:*See—*
Monpetit, Louis A., 3,669,081.

Societe des Procedes Modernes d'Injection Sopromi:*See—*
Gueret, Herve, 3,669,361.

Societe des Procedes Modernes d'Injection Soproni:*See—*
Monpetit, Louis A., 3,669,080.

Societe d'Etudeset de Vente de Materiels pour la Fabrication et le Faconnage du Carton Ondule:*See—*
Barny, Jean Jacques, 3,668,786.

Societe Francaise d'Instruments de Controls et d'Analyses:*See—*
Virloget, Jean Marcel, 3,669,546.

Societe Industrielle Honeywell Bull: *See—*
Girard, Rene Fernand Victor; and Le Guillerm, Jacques, 3,669,866.

Societe Messier: *See—*
Lucien, Rene, 3,669,387.

Societe Nationale Industrielle Aerospatiale: *See—*
Bordat, Andre Jules Edmond, 3,669,589.
Bourquardez, Gaston; and Coffy, Rene Louis, 3,669,566.

Soderstrom, Gill Gunnar; Nilsson, Bertil; and Stahl, Nils Evert Johan. Signal converter. 3,670,146, Cl. 235-61.11d

Soininen, Mauri Aatos: *See—*
Berg, Nils-Christian; and Soininen, Mauri Aatos,3,668,787.

Solomonov, Nikolai Nikolaevich; Ishanin, Vladimir Pavlovich; and Apsalons, Talvalds-Olavs Arnoldovich. Device for securing a valve in the neck of an aerosol vessel. 3,668,824, Cl. 53-330.000

Sordello, Frank J.: *See—*
Matthews, Richard D.; Halfhill, Martin O.; Sordello, Frank J.; and Yang, Harold S.,3,670,316.

Sorenson, Billy L.; and Scott, Ray A., to Coats Company, Inc., The. Bead expander. 3,669,175, Cl. 157-1.100

Sorenson, Hugh E. Steering systems especially for water crafts. 3,669,053, Cl. 114-66.50h

Soussa, Elie Michel; and Habayeb, Jabbour, to Lemo Limited. Filters for tobacco smoke. 3,669,126, Cl. 131-10.9

Sparks, Alle n K., to Universal Oil Products Company. Alkylation phenolic compound. 3,670,030, Cl. 260-613.00d

Spaw, Eugene S.; McGrath, Paul F.; and Otto, Stanley W., to Hallmark Cards, Incorporated. Means including two die sets for embossing and applying foil to a sheet. 3,669,014, Cl. 101-3.000

Spedden, Henry R.; Apps, John A.; and Lowe, Donald F., to Kennecott Copper Corporation. Reduction of ferric ions in cyclic process of leaching and precipitation of copper. 3,669,651, Cl. 75-104.000

Speed-O-Print Business Machines Corporation: *See—*
Hyosaka, Alfred M.; Giebelhausen, Charles W.; and Kaufman, Arthur L., 3,669,535.

Spence, William George. Cable-steered vehicle having a cable tensioning and acturating assembly therefor. 3,669,466, Cl. 280-91.000

Spencer, John H.; Ramsey, Richard T.; and Gilbertson, Warren L., to United States of America, Navy. Mild detonating fuse logic components. 3,669,021, Cl. 102-22.000

Sperry Rand Corporation: *See—*
Breslin, Mary Anne; Cogar, George R.; Lee, Charles A.; Neddenriep, Donald O.; Romeo, Albert J.; Sevilla, Ernesto G.; and Sekse, Torkjell, 3,670,144.
Crosby, Donald P., 3,670,228.
Farrell, Robert G., 3,669,147.
Gerlach, Le Roy E.; Johnson, Gordon P.; and Tandeski, David A., 3,669,262.
Maloney, William T., 3,670,305.
Riggs, Robert F., 3,670,330.
Rowland-Hill, Edward William, 3,669,121.
Rowland-Hill, Edward William, 3,669,122.
Rowland-Hill, Edward William; and McCarty, Horace G., 3,669,125.
Veron, Harry, 3,670,201.
Spierenburg, Gozen, to N.V. Gereedschappenfabriek. Drinking nipple for poultry. 3,669,077, Cl. 119-72.5
Spies, Donald H. Model airplane muffler constructions. 3,669,216, Cl. 181-40.000
Spofa, United Pharmaceutical Works: *See—*
Mansfeld, Viktor; and Padr, Zdenek, 3,670,075.
Spracklen, Edwin E. Spracklen, Dorothy H.: *See—*
McCullough, William N.; and Spracklen, Edwin E., deceased Spracklen, Dorothy H.; legal representative,3,669,748.
Sprague Electric Company: *See—*
Frantz, Franklin D.; Acello, Salvatore J.; and Geller, Harold I., 3,670,091.
Lehovec, Krut; Hielscher, Frank H.; and Preier, Horst M., 3,670,198.
Markarian, Mark, 3,669,302.
Square D Company: *See—*
Ries, Robert G., 3,670,273.
Squibb, E. R., & Sons, Inc.: *See—*
Hoehn, Hans; and Schulze, Ernst, 3,669,950.
Stackpole Carbon Company: *See—*
Bang, Mogens W.; and Olson, David A., 3,670,286.
Stade, Gerhard, to Lindner, Herbert, GmbH, Firma. Method of and apparatus for shaping the profiled surface of a rotating tool for producing cycloid thread flanks on screws. 3,669,088, Cl. 125-11.000
Stafford, Owen L.; and Tarzwell, Robert K., to Dow Chemical Company, The. Process for preparing vinylidene chloride polymers. 3,669,914, Cl. 260-17.00r
Stahl, Nils Evert Johan: *See—*
Soderstrom, Gill Gunnar; Nilsson, Bertil; and Stahl, Nils Evert Johan,3,670,146.
Standard Oil Company: *See—*
Mazur, Conrad F., 3,669,794.
Standard Packaging Corporation: *See—*
Parvin, Allan I.; and Roome, Douglas P., 3,668,820.
Stanley, Ian William: *See—*
Ager, David Joseph; and Stanley, Ian William,3,670,183.
Stapp, Paul R., to Phillips Petroleum Company. Preparation of aminotetrahydropyrans. 3,669,992, Cl. 260-345.1
Stark, Daniel C., to Deering Milliken Research Corporation. Textile product and process. 3,669,818, Cl. 161-63.000
Stark, James A.: *See—*
Husa, Richard; and Stark, James A.,3,669,614.
Starr, Arthur T.; and Edwards, David G., to Xerox Corporation. Automatic transversal equalizer. 3,670,269, Cl. 333-18.000
Starr, James B., to United States of America, Navy. Fluidic device for modulating the temperature of cooling liquid in a garment. 3,669,135, Cl. 137-81.5
Stasio, Robert, to Metaframe Corporation. Brine shrimp hatchery. 3,669,074, Cl. 119-2.000
Stauffer Chemical Company: *See—*
Fancher, Llewellyn W.; and Gray, Reed A., 3,669,642.
Teach, Eugene G., 3,670,010.
Staver Company, Incorporated, The: *See—*
Wilkens, Seymour; and Trunk, Edmund G., 3,670,215.
Stedman, Robert N., to Caterpillar Tractor Company. Protective chain assembly for tires. 3,669,172, Cl. 152-171.000
Steelcase Inc.: *See—*
Semplonius, Frans; and Kolk, Stephen B., 3,669,499.
Stein, Alex H.; and Coder, William D., Jr., to Dexter Corporation, mesne, and Brunswick Corporation. Bowling lane finish containing a polyurethane and a polyolefin. 3,670,049, Cl. 260-859.000
Stein, Ernest W.: *See—*
Kaufman, Harold B., Jr.; Schiffmann, Robert F.; and Stein, Ernest W.,3,670,132.
Stein, Jacob. Citrus fruit squeezer. 3,669,013, Cl. 100-211.000
Stelzer, Werner: *See—*
Stohr, Rudolf; and Stelzer, Werner,3,668,793.
Stemmler, Kurt, to Winkler & Dunnebier Maschinenfabrik und Eisengieberei. Apparatus for folding the closing flap of envelopes. 3,668,982, Cl. 93-62.000
Sterling Detroit Company: *See—*
Canner, Herman M., 3,668,941.
Stevens, Hugh D.: *See—*
Mitchell, Reid L.; Muller, Thomas E.; Stevens, Hugh D.; and Tabke, Robert S.,3,670,069.
Stevens, J. P., & Co., Inc.: *See—*
Trotter, Marvin N., 3,669,366.
Stevens, J. P., Co., Inc.: *See—*
Tesoro, Giuliana C., 3,669,977.
Stevens, John M.: *See—*
Stevens, John M.; and Maxwell, Richard R., 3,670,170.
Stevens, John M.; and Maxwell, Richard R., to Stevens, John M. Nonvisible electromagnetic radiation measuring device. 3,670,170, Cl. 250-229.000
Stewart, Aubrey P., Jr.; and Falk, John D., to Allied Chemical Corporation. Flowable stabilizer suspensions. 3,669,675, Cl. 99-1.000
Stihler, David T. Refuse container. 3,669,485, Cl. 294-73.000
Stockham, James R.: *See—*
Hayes, Robert R.; Fuller, John L.; and Stockham, James R.,3,669,449.
Stohr, Rudolf; and Stelzer, Werner, to Rieker, Justus, & Co. Footwear and insert therefor. 3,668,793, Cl. 36-71.000
Stokes, David Howard: *See—*
Greenwood, John Malcolm; and Stokes, David Howard,3,669,891.
Stokes, Stanley L., to Wagner Electric Corporation. Control valve. 3,669,504, Cl. 303-6.00c
Stokes, Stanley L., to Wagner Electric Corporation. Control valve. 3,669,507, Cl. 303-6.00c
Stokes, Stanley L.: *See—*
Papin, Joseph E.; and Stokes, Stanley L.,3,669,506.
Stokvis, R. S., & Fils: *See—*
Barragan, Jacques, 3,668,813.
Stolzy, Albert D.: *See—*
Grant, John M.; and Stolzy, Albert D.,3,669,550.
Stoody Company: *See—*
Zvanut, Albert J., 3,670,135.
Storey, William T., II, to Technitrol, Inc. Electrical component. 3,670,270, Cl. 333-30.000
Stork Amsterdam N.V.: *See—*
Vertegaal, Jacobus G., 3,668,738.
Stowe, Brian, to Lucas, Joseph, (Industries) Limited. Windscreen wiper motors. 3,670,118, Cl. 200-47.000
Strack, Hans A.: *See—*
Cox, Ronald H.; and Strack, Hans A.,3,669,655.
Strack, Richard R., to American Optical Corporation. Method for producing flexible image transporting fiber optic conduit. 3,669,772, Cl. 156-15.000
Strand, David L.: *See—*
Abler Roger L.; and Strand, David L.,3,669,892.
Stratton & Terstegge Co., Inc.: *See—*
Dew, Robert C., 3,669,429.
Strauss, George M., to Kollsman Instrument Corporation. Parameter read-out systems for pressure-frequency transducers. 3,668,930, Cl. 73-386.000
Strubbe, Gilbert J.: *See—*
De Coene, Frans J.; and Strubbe, Gilbert J.,3,669,124.
Struble, Glenn E., to Diamond International Corporation. Packaging sleeve with heat-shrinkable protection sling and blank for producing same. 3,669,337, Cl. 229-14.0ba
Struzina, Richard J., to Computing Devices of Canada Limited. Strip positioning apparatus. 3,669,382, Cl. 242-186.000
Strydom, Mauritz Leon, to Tobacco Research and Development Institute Limited. Non-destructive hardness, testing of articles such as cigarettes. 3,668,928, Cl. 73-78.000
Stuart, Frank T. Clacker for attachment to archery bow. 3,669,059, Cl. 116-67.00r
Studer, Victor Vernon: *See—*
Gurkin, Martin; Sanderson, Gary Warner; and Studer, Victor Vernon,3,669,680.
Sturges Company, The: *See—*
Weslock, Ernest A., 3,669,491.
Sturlason, Leif Viggo: *See—*
Petersen, Jorgen Hartvig; and Sturlason, Leif Viggo,3,669,419.
Sturm, Ruger & Co., Inc.: *See—*
Sefried, Harry H., II, 3,668,800.
Sugita, Tohru: *See—*
Kobayashi, Tetsuji; Takayanagi, Seiichi; and Sugita, Tohru,3,669,095.
Sullivan, John F.: *See—*
Moody, Roy A.; Sullivan, John F.; and Thayer, Arlie J.,3,668,744.
Sullivan, Miles Vincent: *See—*
Peters, Frank Groom; Sinclair, William Robert; and Sullivan, Miles Vincent,3,669,863.
Sullivan, Shelby F.: *See—*
Lindsay, George F.; Sullivan, Shelby F.; and Whitehouse, Harper John,3,670,151.
Sumitomo Chemical Company, Limited: *See—*
Usamoto, Teruyoshi; Yokota, Masao; and Kondo, Tamotu, 3,669,828.
Sumitomo Chemical Company, Ltd.: *See—*
Itaya, Nobushige; Kamoshita, Katsuzo; Mizutani, Toshio; Kitamura, Shigeyoshi; Nakai, Shinji; Kameda, Nobuyuki; Fujimoto, Keimei; and Okuno, Yositosi, 3,669,989.
Nakaguchi, Kohei; Nishikida, Tomozumi; Kawasumi, Shohachi; Maemoto, Kenichi; Sano, Takezo; Fujii, Yoshikazu; Harada, Koichi; and Ueda, Keijyu, 3,669,945.
Okamoto, Tadashi; Kobayashi, Tsuyoshi; and Yamamoto, Hisao, 3,669,960.
Sato, Nobuyasu; Nakamura, Toshio; and Takenaka, Hiroshi, 3,669,987.
Tsuchiya, Hiroshi; Kunio, Nishinomiya-Shi; Kimura, Akio; Kawano, Suminori; Fujimoto, Keimei; Ozaki, Toshiaki;

Yamamoto, Sigeo; Okuno, Yositosi; Tanaka, Katsutoshi; Ooishi, Tadashi; and Takeda, Hisami, 3,670,057.
Sumitomo Electric Industries, Ltd.: *See—*
Takeo, Keinosuke; Kosugi, Kazuo; and Kamise, Tadaoki, 3,669,762.
Sumitomo Metal Industries Limited: *See—*
Shiraiwa, Toshio; and Hiroshima, Tatsuo, 3,670,239.
Sun Oil Company: *See—*
Davis, Ronald L., 3,670,039.
Davis, Ronald L., 3,670,040.
Sunbeam Corporation: *See—*
Nauheimer, Robert R.; and Khaja, Farees Uddin, 3,669,694.
Sundblom, Leif J.; and Ollivier, Louis A., to Veriflo Corporation. Ventilator. 3,669,108, Cl. 128-145.8
Sunderlin, Donald E.: *See—*
Gutman, Nathan; Moser, Raymond L.; Oldenburg, Dorrance; and Sunderlin, Donald E.,3,669,161.
Suozzo, Leoanrd S. Mechanical shock and sway arrestor. 3,669,391, Cl. 248-54.00r
Surls, Joseph P., Jr.: *See—*
Olson, Robert S.; and Surls, Joseph P., Jr.,3,669,649.
Susey, Peter E.: *See—*
Teague, Walter Dorwin, Jr.; Montalbano, Anthony Philip; Oakes, Andrew A.; Osborne, Keith; and Susey, Peter E.,3,668,784.
Susi, Peter Vincent; and Weston, Norma Ann, to American Cyanamid Company. N,N,N',N'-tetrakis-(p-Di acyclic hydrocarbyl-aminophenyl)-p-arylenediamine. 3,670,025, Cl. 260-576.000
Susuki, Rinnosuke; Hoshi, Hiroshi; Araki, Shinichi; and Ohshita, Takashi, to Raion Yushi Kabushiki Kaisha. Nozzle head for spraying aerosol. 3,669,321, Cl. 222-402.240
Sutter, Fritz; and Maier, Andreas, to Buss AG. Method and an apparatus for the production of dispersions of dyestuffs. 3,669,416, Cl. 259-21.000
Suzuki, Hiroshi: *See—*
Wada, Ryuji; Suzuki, Hiroshi; and Nakato, Masuo,3,669,514.
Suzuki, Ichizo; Yasui, Hideo; and Nanba, Kazuhiko, to Kabushiki Kaisha Ohara Kogaku Garasu Seizosho. Optical glass. 3,669,696, Cl. 106-47.00q
Suzuki, Kenkichi: *See—*
Kumada, Akio; Suzuki, Kenkichi; and Kitta, Kenichi,3,670,211.
Suzuki, Norio; and Furukawa, Yoji, to Tokyo Shibaura Electric Co., Ltd. Projector. 3,670,158, Cl. 240-41.500
Suzuki, Seikou: *See—*
Hohsho, Yukio; Yamada, Koichiro; Oyama, Yoshishige; Teranishi, Takao; and Suzuki, Seikou,3,669,423.
Suzuki, Takatoshi: *See—*
Komatsu, Noboru; Suzuki, Takatoshi; Ito, Takuo; Hara, Yoshiteru; and Asakura, Kouichi,3,668,917.
Suzuki, Yukio, to Mayashibara Company. Process for preparing vitamin B_2 glucoside. 3,669,835, Cl. 195-28.00r
Svenska Rotor Maskiner Aktiebolag: *See—*
Mock, Karl Heinz, 3,669,183.
Swanson, Swan G. Variable high speed gear pump. 3,669,577, Cl. 418-21.
Sweet, Larrie H.; and Baker, Nelson H., Jr., to Carborundum Company, The. Furnace wall construction. 3,668,831, Cl. 52-484.000
Swenson, Henry F. Swing arm for holding a dressing device. 3,669,089, Cl. 125-11.
Swett, Leo Ralph; and Ratajczyk, James Daniel, to Abbott Laboratories. Pyrazolothiazepines and isoxazolothiazepines. 3,669,983, Cl. 260-307.00h
Swindells, Frank E., to Melpar, Inc. Rechargeable electrochemical cell with solid zinc salt complex electrolyte. 3,669,743, Cl. 136-6.000
Switches, Inc.: *See—*
Corn, Prentice R.; and Gebhardt, Wallace A., 3,670,120.
Switches Incorporated: *See—*
Gebhardt Wallace A.; and Corn, Prentice R., 3,670,119.
Swope, Charles Hermas: *See—*
Koester, Charles J.; and Swope, Charles Hermas,3,670,260.
Sykes, Paul M.: *See—*
Annis, Darrell D.; Dodson, Keith D.; and Sykes, Paul M.,3,669,931.
Sylvania Electric Products, Inc.: *See—*
Arumugham, Rangaswamy; and Wheeler, Robert Charles, 3,670,095.
Bulharowski, John Francis, 3,670,101.
Hansen, Harvey Gordon, 3,669,304.
Johnson, Gordon L.; and Gannoe, Thomas E., 3,670,294.
Mattson, William R., 3,670,094.
Meyer, Edward, 3,669,715.
Sylvester, Paul: *See—*
Grewcock, Sidney B.; Cooper, Alan; Amos, Arthur; and Sylvester, Paul,3,668,899.
Symcox, Robert Owen: *See—*
Moody, Anthony Gifford; and Symcox, Robert Owen,3,670,011.
Symmes, Paul S., to American Clinic, Inc. Adjustable electrode means for a sleep inducing machine. 3,669,119, Cl. 128-410.
Tabke, Robert S.: *See—*
Mitchell, Reid L.; Muller, Thomas E.; Stevens, Hugh D.; and Tabke, Robert S.,3,670,069.
Tabuchi, Ichiro; Iwami, Akira; Harita, Yasuhiro; and Yamamoto, Toshiaki, to Mitsui Shipbuilding and Engineering Co., Ltd. Container supporting apparatus in the container ship. 3,669,284, Cl. 214-10.5
Tait, John B., to International Business Machines Corporation. Time sensed static beam holographic storage system. 3,669,521, Cl. 350-3.500
Tajima, Shigenobu: *See—*
Koyanagi, Shunichi; Tajima, Shigenobu; Shimizu, Toshihide; and Kurimoto, Kazuhiko,3,669,946.
Takahashi, Hisamitsu: *See—*
Doi, Kazuo; Nakajima, Jun; Takahashi, Hisamitsu; and Tomokawa, Hideo,3,669,699.
Takahashi, Nagashige, to Olympus Optical Co., Ltd. Endotracheal tube. 3,669,098, Cl. 128-6.000
Takahashi, Tadanobu; and Usami, Kunihiko, to Nippon Seiko Kabushiki. Anti-creep bearing assembly for an antifriction bearing. 3,669,519, Cl. 308-236.
Takamura, Akira; Kunii, Kazushi; Seharada, Saburo; and Nakatani, Hiroshi. Guiding and dampening device. 3,669,222, Cl. 187-95.000
Takayanagi, Seiichi: *See—*
Kobayashi, Tetsuji; Takayanagi, Seiichi; and Sugita, Tohru,3,669,095.
Takeda Chemical Industries, Ltd.: *See—*
Nakao, Yoshio; Kuno, Mitsuzo; Yamatodani, Saburo; Tanaka, Fumihiko; and Nojiri, Tsutomu, 3,669,836.
Takeda, Hisami: *See—*
Tsuchiya, Hiroshi; Kunio, Nishinomiya-Shi; Kimura, Akio; Kawano, Suminori; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Okuno, Yositosi; Tanaka, Katsutoshi; Ooishi, Tadashi; and Takeda, Hisami,3,670,057.
Takenaka, Hiroshi: *See—*
Sato, Nobuyasu; Nakamura, Toshio; and Takenaka, Hiroshi,3,669,987.
Takenaka, Shigeo; and Iwamoto, Akira, to Nippon Kayaku Kabushiki Kaisha. Oxydehydrogenation process. 3,669,949, Cl. 260-680.00e
Takeo, Keinosuke; Kosugi, Kazuo; and Kamise, Tadaoki, to Sumitomo Electric Industries, Ltd. Method for heat-treating of hot rolled rods. 3,669,762, Cl. 148-18.
Takizawa, Haruki: *See—*
Yamada, Seibi; and Takizawa, Haruki,3,669,584.
Talmage, Charles Robert, to New Britain Machinery Company. Force-applying tools. 3,668,951, Cl. 81-121.00r
Tanaka, Fumihiko: *See—*
Nakao, Yoshio; Kuno, Mitsuzo; Yamatodani, Saburo; Tanaka, Fumihiko; and Nojiri, Tsutomu,3,669,836.
Tanaka, Katsutoshi: *See—*
Tsuchiya, Hiroshi; Kunio, Nishinomiya-Shi; Kimura, Akio; Kawano, Suminori; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Okuno, Yositosi; Tanaka, Katsutoshi; Ooishi, Tadashi; and Takeda, Hisami,3,670,057.
Tanaka, Kazunobu: *See—*
Kohashi, Tadao; and Tanaka, Kazunobu,3,669,907.
Tanaka, Masao; Oka, Tetuo; Fujio, Tatsuro; and Mochizuki, Kazuo, to Kyowa Hakko Kogyo Co., Ltd. Purification of L-asparaginase. 3,669,842, Cl. 195-6.00a
Tanaka, Takeshi: *See—*
Saito, Kazuo; Tanaka, Takeshi; and Saito, Ichiro,3,670,052.
Tanaka, Yusaku: *See—*
Ando, Satoshi; Tanaka, Yusaku; Kojima, Minoru; and Fujimura, Kyoichi,3,669,917.
Tandeski, David A.: *See—*
Gerlach, Le Roy E.; Johnson, Gordon P.; and Tandeski, David A.,3,669,262.
Tani, Haruhisa: *See—*
Yazawa, Masahide; and Tani, Haruhisa,3,669,795.
Tanner, David: *See—*
Magat, Eugene Edward; and Tanner, David,3,670,048.
Taquino, Thomas P.: *See—*
Hieber, Ellsworth E.; Taquino, Thomas P.; and Hillery, Frank Edward,3,668,976.
Tarzwell, Robert K.: *See—*
Stafford, Owen L.; and Tarzwell, Robert K.,3,669,914.
Tate & Lyle Limited: *See—*
Bennett, Michael Camm; and Gardiner, Sidney David, 3,669,620.
Tate, Lawrence A., to International Business Machines Corporation. Read gating circuit for core sensing. 3,670,314, Cl. 340-174.
Taudien, Alfred: *See—*
Golda, Eugene; and Taudien, Alfred,3,669,660.
Tax, Hans; and Franke, Rudiger, said Franke assor. to said Tax. Container transporting system. 3,669,206, Cl. 180-98.000
Taylor, Frederick A. Motor driven ice vehicle. 3,669,201, Cl. 180-6.00r
Taylor, Keith M., to Monsanto Company. Ammoxidation of saturated hydrocarbons. 3,670,006, Cl. 260-465.300
Taylor, Keith M., to Monsanto Company. Amloxidation of saturated hydrocarbons. 3,670,008, Cl. 260-465.300
Taylor, Keith M., to Monsanto Company. Ammoxidation of saturated hydrocarbons. 3,670,009, Cl. 260-465.300
Taylor Manufacturing Company: *See—*
Chalich, Clarles, 3,669,241.
Teach, Eugene G., to Stauffer Chemical Company. Trifluoromethyl acylated urea carbamates. 3,670,010, Cl. 260-479.00c
Teague, Walter Dorwin, Jr.; Montalbano, Anthony Philip; Oakes, Andrew A.; Osborne, Keith; and Susey, Peter E., to Columbia Gas System Service Corporation. Method and apparatus for drying laundry. 3,668,784, Cl. 34-10.000
Technicon Instruments Corporation: *See—*
Heller, Zindel H., 3,669,544.

Herron, Rand E., 3,668,936.
Technitrol, Inc.: *See—*
Storey, William T., II, 3,670,270.
Tee-Pak, Inc.: *See—*
Bridgeford, Douglas J., 3,669,791.
Turbak, Albin F., 3,669,692.
Teeple, Michael D.: *See—*
Snider, Theodore O.; and Teeple, Michael D.,3,669,599.
Teggers, Hans: *See—*
Lowicki, Norbert; and Teggers, Hans,3,669,617.
Teijin Limited: *See—*
Fujiwara, Shigeru; Nagae, Kenji; and Okuhashi, Tomomi, 3,669,736.
Shimauchi, Shiro; Yoshida, Saburo; and Muro, Koji, 3,669,611.
Yamada, Seibi; and Takizawa, Haruki, 3,669,584.
Yamamoto, Akira; and Moriyama, Keiichi, 3,669,740.
Teijin Ltd.: *See—*
Hori, Kikuo; and Sato, Yoshito, 3,669,373.
Teknor Apex Company: *See—*
Fath, Joseph; and Deardorff, Donald L., 3,669,995.
Tektronix, Inc.: *See—*
Hawes, James D., 3,670,199.
Tel-Tech Corporation: *See—*
Fritkin, George A., 3,670,250.
Telemation, Inc.: *See—*
Briggs, John A.; and Ward, Ronald C., 3,670,100.
Pauly, Donald E., 3,670,181.
Teranishi, Takao: *See—*
Hohsho, Yukio; Yamada, Koichiro; Oyama, Yoshishige; Teranishi, Takao; and Suzuki, Seikou,3,669,423.
Terasaki, Iwao; Kimura, Yoshio; Okamoto, Toshio; Shima, Tsukasa; Kohno, Mitsuo; and Kitamura, Kazuyuki, to Asahi Kasei Kogyo Kabushiki Kaisha. Polycondensing bis-(hydroxyalkyl)therephthalates in the presence of small amounts of a germanium compound and a sterically hindered bisphenol or trisphenol. 3,669,927, Cl. 260-47.00c
Tesoro, Giuliana C., to Stevens, J. P., Co., Inc. Novel cyclic compositions. 3,669,977, Cl. 260-301.000
Tessler, Martin M.; and Rutenberg, Morton W., to National Starch and Chemical Corporation. Builders for synthetic detergent compositions based on carboxyethyl derivatives of polyalcohols. 3,669,890, Cl. 252-89.000
Teter, Harold P. Baseball diamond layout device. 3,668,781, Cl. 33-1.000
Teutsch, John H. Automobile wheel theft prevention device. 3,668,952, Cl. 81-125.000
Teves, Alfred, G.m.b.H.: *See—*
Marschall, Helmut; Kammermayer, Wolfgang; Beller, Hans Albert; Hahm, Heinz; and Belart, Juan, 3,669,226.
Texas Instruments, Incorporated: *See—*
Cash, John H., Jr.; and Keene, Joe P., 3,669,861.
Cox, Ronald H.; and Strack, Hans A., 3,669,655.
Textiles, Inc.: *See—*
Fowler, Donald W., 3,669,046.
Textron Inc.: *See—*
Baxter, David W., Jr., 3,669,408.
Thayer, Arlie J.: *See—*
Moody, Roy A.; Sullivan, John F.; and Thayer, Arlie J.,3,668,744.
the United States of America, Atomic Energy Commission: *See—*
Dietrich, Lee A.; Dikeman, John C.; and Johnson, Kenneth R., 3,669,631.
Theer, Anton: *See—*
Winkler, Alfred; Theer, Anton; Zanner, Johann; and Hennig, Fridolin,3,668,989.
Theisen, Roger Pierre, to Continental Ore Corporation. Direct reduction process and simultaneous continuous casting of metallic materials in a crucible to form rods. 3,669,178, Cl. 164-50.000
Theodore, Charles, to LTV Ling Altec, Inc. Protected power supply. 3,670,232, Cl. 321-14.
Theodore, Charles, to LTV Ling Altec, Inc. Hermetic transformer. 3,670,276, Cl. 336-92.000
Therm-O-Disc, Incorporated: *See—*
Holden, Ronald L., 3,670,283.
Theurer, Josef: *See—*
Plasser, Franz; and Theurer, Josef,3,669,025.
Thevis, Paul; Schneider, Adolf; and Jakubaschk, Horst, to Olympia Werke A.G. Apparatus for sensing digital information. 3,669,348, Cl. 235-60.00r
Thibault, Jean-Jacques; and Carle, Jacques, l'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude. Adsorptive cryopumping method and apparatus. 3,668,881, Cl. 62-55.500
Thiers, Ralph E.; and Meyn, Julius, Jr., to Bio-Science Laboratories. Interaction correction in continuous flow analysis. 3,669,626, Cl. 23-230.00a
Thill, Bruce P.: *See—*
Tomalia, Donald A.; and Thill, Bruce P.,3,670,046.
Thiokol Chemical Corporation: *See—*
Riddell, Vernon A., 3,668,783.
Thomas, Michael D. Container with locking actuator. 3,669,300, Cl. 220-36.000
Thomas, Wilbur E., to General Binding Corporation. Collator. 3,669,442, Cl. 270-58.000
Thompson, Brian: *See—*
Coelho, Norman C.; and Thompson, Brian,3,668,935.
Thompson, Edwin R., to Thompson-Canfield Inc. Mounting device for weather sealing inserts in doors. 3,668,807, Cl. 49-482.000
Thompson, Hal J., to DCA Food Industries, Inc. Comestible stabilizer composition. 3,669,688, Cl. 99-139.000
Thompson, Lloyd W., deceased0 (by Thompson, Mildred B.; administratrix), to Cone Mills Corporation, mesne. Method and apparatus for constructing fabric enclosed springs. 3,668,816, Cl. 53-28.000
Thompson, Mildred B.: *See—*
Thompson, Lloyd W.,3,668,816.
Thompson-Canfield Inc.: *See—*
Thompson, Edwin R., 3,668,807.
Thomson, Lois J.: *See—*
Babb, Raymond E., 3,669,263.
Thorington, Luke; and Parascandola, Louis J., to Duro-Test Corporation. Electric lamps producing energy in the visible and ultra-violet ranges. 3,670,193, Cl. 313-108.00r
Thornton, William A., Jr.; and Unglert, Melvin C., to Westinghouse Electric Corporation. Color-corrected high-pressure mercury-vapor lamp. 3,670,194, Cl. 313-109.000
Thuillier, Yvonne, to Rolland, Albert, S.A. Process for obtaining and preserving stable bacterial variants. 3,669,846, Cl. 195-96.000
Thum, Egon, to Siemens Aktiengesellschaft. Ironless direct-current machine having a normal conducting rotor and a superconducting excitation system. 3,670,187, Cl. 310-10.000
Tillmann, Horst, to Dorken & Mankel KG. Automatic door closer. 3,668,737, Cl. 16-55.000
Time/Data Corporation: *See—*
Sloane, Edwin A.; and Scaggs, Lee E., 3,670,326.
Timex Corporation: *See—*
Diersbock, Gunther Rudalph, 3,668,860.
Tindal, James A., to North American Rockwell Corporation. Artificial heart. 3,668,708, Cl. 3-1.000
Tinder, Edgar Karl, to Du Pont de Nemours, E. I., and Company. Synthetic organic fiber resistant to yellowing. 3,669,726, Cl. 117-138.80n
Tiuri, Martti Eelis: *See—*
Kalliomaki, Kalevi Juhani; Tiuri, Martti Eelis; and Vakkila, Seppo Matti,3,670,275.
Toagosei Chemical Industry Co., Ltd.: *See—*
Shoda, Shichiro; Ito, Nobuo; and Miki, Toshiro, 3,670,012.
Tobacco Research and Development Institute Limited: *See—*
Strydom, Mauritz Leon, 3,668,928.
Tobey, Hubert E.; Masiuk, Alphonse M.; Hood, John W.; and Irvin, Dee L., to International Telephone and Telegraph Corporation. Pre-sliced muffin and pre-slicing apparatus. 3,669,165, Cl. 146-98.000
Togami, Shunji, to Nippon Piston Ring Co., Ltd. Piston ring. 3,669,461, Cl. 277-235.00r
Togo, Kazushi: *See—*
Akamatsu, Akira; Togo, Kazushi; and Kida, Yoko,3,669,717.
Tokheim Corporation: *See—*
Overy, Lester R., 3,670,317.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Sakamoto, Tetsuzo; and Torii, Akiomi, 3,669,559.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Idei, Gijun; and Numata, Saburo, 3,670,184.
Kamegaya, Takeo; Imahori, Yutaka; Ohta, Akira; Kanoh, Tadao; and Ohara, Akio, 3,670,195.
Kobayashi, Tetsuji; Takayanagi, Seiichi; and Sugita, Tohru, 3,669,095.
Nakagawa, Takashi; Tsutsumi, Tadashi; and Hori, Hiroo, 3,670,213.
Sakamoto, Tetsuzo; and Torii, Akiomi, 3,669,559.
Suzuki, Norio; and Furukawa, Yoji, 3,670,158.
Toledo, Emil: *See—*
Semienko, Peter P.; and Toledo, Emil,3,669,865.
Tomalia, Donald A.; and Thill, Bruce P., to Dow Chemical Company, The. Copolymers of bis-oxazolines and dithiol compounds as curing agents for polyepoxides. 3,670,046, Cl. 260-830.
Tomioka, Katsuyoshi: *See—*
Komatsu, Koei; Okuya, Eitaro; Tomioka, Katsuyoshi; Sakai, Masato; Hayashi, Shigeki; Yasunaga, Hidetoshi; and Kogure, Akira,3,669,943.
Tomlinson, Charles N.: *See—*
Davey, Ronald E.; Tomlinson, Charles N.; and White, Alan,3,669,826.
Tomoegawa Paper Manufacturing Company Limited: *See—*
Nakao, Osakazu; Nakagawa, Saburo; Hirose, Juichi; Yamazaki, Shigeyuki; Amano, Takashi; Nakamura, Toshio; and Yamamoto, Hiroyuki, 3,669,916.
Tomokawa, Hideo: *See—*
Doi, Kazuo; Nakajima, Jun; Takahashi, Hisamitsu; and Tomokawa, Hideo,3,669,699.
Tone, Frederick F., to Eastman Kodak Company. Method and apparatus for manufacturing aperture cards. 3,668,980, Cl. 93-1.00r
Tonka Corporation: *See—*
Pauly, Ronald R., 3,668,806.
Tonoike, Takao: *See—*
Konotsune, Shiro; Kachi, Atsuyuki; Tonoike, Takao; and Mori, Kinya,3,669,948.
Toray Industries, Inc.: *See—*
Asahara, Tomohiko; Yoda, Naoya; and Minami, Nuneyoshi, 3,669,930.
Torii, Akiomi: *See—*
Sakamoto, Tetsuzo; and Torii, Akiomi,3,669,559.

Toshio, Tanaka: *See—*
Masayasu, Arikawa; Motomi, Kano; Katsuro, Iio; and Toshio, Tanaka,3,669,335.
Towmotor Corporation: *See—*
Doyle, James R., 3,669,290.
Toy, Albert: *See—*
Sinizer, David I.; Toy, Albert; Atteridge, David G.; and Fanelli, Louis H.,3,669,364.
Toyo Rayon Kabushiki Kaisha: *See—*
Mitsukawa, Konosuke; Hattori, Hiroshi; Hikoda, Toyohiko; and Masubuchi, Yoshinori, 3,669,792.
Toyo Soda Manufacturing Co., Ltd.: *See—*
Sakomura, Toshio; Shimizu, Akihiko; Kino, Takayuki; and Kita, Atsushi, 3,669,944.
Toyoda Koki Kabushiki Kaisha (trading as Toyoda Machine Works, Ltd.): *See—*
Wada, Ryuji; Suzuki, Hiroshi; and Nakato, Masuo, 3,669,514.
Trachsler, Fred A. Chain door latch. 3,669,483, Cl. 292-264.000
Tracy, William K., to International Telephone and Telegraph Corporation. Grounding foil for electrical connectors. 3,670,292, Cl. 339-143.00r
Trane Company, The: *See—*
Schauls, James J., 3,669,186.
Treadwell Corporation: *See—*
Lesk, Norman; and Kleinman, Mitchel, 3,669,029.
Treplex Safety Glass Company Limited: *See—*
Davey, Ronald E.; Tomlinson, Charles N.; and White, Alan, 3,669,826.
Trevillyan, Alvin E.; and Vecbastiks, Ivars, to Atlantic Richfield Company. Preparation of phenylene diisocyanate by thermal decomposition of corresponding dinitrile sulfite. 3,670,003, Cl. 260-453.00p
Trevor, John B., III. Analog-digital shaft position encoder. 3,670,324, Cl. 340-347.0sy
Tri-Ordinate Corporation: *See—*
Hoglund, Nils, 3,669,558.
Tribble, Robert E.: *See—*
Howell, Eddie P.; Youngman, Carl A.; Hardison, Jack E.; and Tribble, Robert E.,3,668,927.
Trim, James H., to LTV Aerospace Corporation. Stray electrical energy detector circuit. 3,670,244, Cl. 324-72.
Triple E Corporation: *See—*
Silver, Robert L.; and Schmidt, Adrian J., 3,669,298.
Troponwerke Dinklage & Co.: *See—*
Boltze, Karl-Heinz; and Lorenz, Dietrich, 3,669,967.
Trotter, Marvin N., to Stevens, J. P., & Co., Inc. Electro-bunch attachment. 3,669,366, Cl. 242-26.410
Trunk, Edmund G.: *See—*
Wilkens, Seymour; and Trunk, Edmund G.,3,670,215.
TRW Inc.: *See—*
Cook, Harvey A., 3,669,084.
Howe, John Arthur, 3,670,121.
Tsenter, Boris Ioselevich; Sergeev, Vyacheslav Mikhailovich; and Kloss, Alexandr Ilich. Hermetically sealed nickel-hydrogen storage cell. 3,669,744, Cl. 136-28.000
Tsuchiya, Hiroshi; Kunio, Nishinomiya-Shi; Kimura, Akio; Kawano, Suminori; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Okuno, Yositosi; Tanaka, Katsutoshi; Ooishi, Tadashi; and Takeda, Hisami, to Sumitomo Chemical Company, Ltd. S(alkilthio ethyl) phosphorothioamidate. 3,670,057, Cl. 260-948.000
Tsutsumi, Tadashi: *See—*
Nakagawa, Takashi; Tsutsumi, Tadashi; and Hori, Hiroo,3,670,213.
Tucker, Alvin S., to Phillips Petroleum Company. Apparatus for molding and ejecting plastic articles. 3,669,598, Cl. 425-249.
Tulagin, Vsevolod, to Xerox Corporation. Imaging system. 3,669,872, Cl. 204-299.000
Tunze, Norbert: *See—*
Huckstedt, Guido; and Tunze, Norbert,3,669,883.
Turbak, Albin F., to Tee-Pak, Inc. Water and oxygen impermeable comminuted meat product casing. 3,669,692, Cl. 99-176.000
Turner, Lyman H.; and Manzek, Rhinehart A., to Xerox Corporation. Sheet propelling apparatus. 3,669,447, Cl. 271-53.000
Turner, Prescott K., to General Electric Company. Method of manufacturing double insulated plugs. 3,668,779, Cl. 29-629.000
Turner Wilson S.: *See—*
Lacey, Richard F.; Cutter, Leonard S.; and Turner Wilson S.,3,670,171.
Turpin, Charles Henry; and Ryan, John A., to Pillsbury Company, The. Apparatus for scoring fiber cans. 3,668,981, Cl. 93-36.50r
Turpin, Charles H.: *See—*
Leezer, James R.; Reid, Francis R.; Turpin, Charles H.; and Rejsa, Jack J.,3,669,346.
Tutelman, David Morris, to Bell Telephone Laboratories, Incorporated. Distributed logic memory cell for parallel cellular-logic processor. 3,670,308, Cl. 340-172.500
Tutle, Edward G.: *See—*
Decker, Charles L.; and Tutle, Edward G.,3,670,277.
Tuura, Eugene F. Movable platform. 3,669,292, Cl. 214-620.
Tyler, Virgil E. Slip joint nut wrench. 3,668,950, Cl. 81-98.000
Typrowicz, Wladyslaw: *See—*
Kamborian, Jacob S.; Typrowicz, Wladyslaw; and Anderson, Gordon S.,3,668,728.
Uchida, Eizaburo: *See—*
Munekata, Takashi; and Uchida, Eizaburo,3,669,998.
Ueda, Keijyu: *See—*
Nakaguchi, Kohei; Nishikida, Tomozumi; Kawasumi, Shohachi; Maemoto, Kenichi; Sano, Takezo; Fujii, Yoshikazu; Harada, Koichi; and Ueda, Keijyu,3,669,945.
Ugi, Ivar, to Farbenfabriken Bayer Aktiengesellschaft. Diphenylmethane polyisonitriles. 3,670,005, Cl. 260-465.
Uhlig, Fritz; and Braun, Jurgen, to Kalle Aktiengesellschaft. Preparation of a single-metal printing plate with iminoquinone diazide involving development and decoating with alkaline aqueous solution of different strength. 3,669,659, Cl. 96-33.900
Ulich, Michael D., to Westinghouse Electric Corporation. Hub and shaft securement means. 3,669,477, Cl. 287-52.070
Ulpe, Alexander: *See—*
Sander, Otto; and Ulpe, Alexander,3,668,875.
Ulrich, Schwieter: *See—*
Gloor, Urs; Ruegg, Rudolf; and Ulrich, Schwieter,3,670,031.
Ultrasonic Systems, Inc.: *See—*
Deans, Howard; and Sager, Thomas B., 3,669,780.
Umbach, Hans; and Jena, Hans, to Dynamit Nobel AG. Apparatus for maintaining the internal air pressure during the production of sized plastic pipe. 3,669,580, Cl. 18-14.
Underwriters Safety Device Co.: *See—*
Ege, Hans Raymond; and Doctor, Walter L., Jr., 3,670,295.
Unger, Robert McCowan, to Raytheon Company. Delay line structure for traveling wave devices. 3,670,197, Cl. 315-3.500
Unglert, Melvin C.: *See—*
Thornton, William A., Jr.; and Unglert, Melvin C.,3,670,194.
Union Carbide Corporation: *See—*
Bucher, Paul E.; and Picunko, Thomas, 3,669,551.
Koleske, Joseph Victor; Roberts, Rene Marie-Joseph; and DelGiudice, Frank Paul, 3,670,045.
Morehouse, Edward Lewis, 3,669,913.
Raymus, Grantges J., 3,669,255.
Union Oil Company of California: *See—*
Fischer, Paul W., 3,669,189.
Uniroyal, Inc.: *See—*
Fetish, William H., Jr., 3,669,471.
Jones, Doyle P.; Kohrn, Robert C.; and Perkins, Donald V., 3,669,299.
United Aircraft Corporation: *See—*
Moore, Joseph B.; and Athey, Roy L., 3,669,180.
Smart, Raymond C., 3,669,065.
United Kingdom of Great Britain and Northern Ireland, Minister of Supply in Her Majesty's Government of the:*See—*
Clare, John Dickens; and Marsh, Stanley Bruce, 3,670,327.
United Kingdom of Great Britain and Northern Ireland, Minister of Technology in Her Britannic Majesty's Government of the:*See—*
Phillips, Leslie Nathan, 3,669,158.
United McGill Corporation: *See—*
Maurer, Robert F.; Mc Vay, Robert D.; and Hummel, Donald L., 3,669,581.
United States of America
Agriculture: *See—*
Friedman Mendel, 3,669,610.
Jones, Duane A.; Fanta, George F.; and Burr, Robert C., 3,669,915.
Nonaka, Masahide, 3,669,690.
Weaver, Merle L.; and Hautala, Earl, 3,669,685.
Army: *See—*
Rittenbach, Otto E., 3,670,331.
Atomic Energy Commission: *See—*
Hardy, Richard W.; Knowlen, Robert B.; Sandifer, Cecil W.; and Plake, William C., 3,670,164.
Health, Education, and Welfare: *See—*
Marantz, Laurence B.; and Greenbaum, Michael A., 3,669,878.
Interior: *See—*
Schaeffler, Otto S., 3,669,954.
National Aeronautics and Space Administration, Administrator, with respect to an invention of:
Andrews, Thomas W. Adjustable support. 3,669,393, Cl. 248-188.400
Cohen, Edward A., and Manatt, Stanley L. Audio frequency marker system. 3,670,241, Cl. 324-79.
Frost, James D., Jr. Compressible biomedical electrode. 3,669,110, Cl. 128-2.10e
Heidt, Michael F., Novotny, John E., and Shankar, Naranappa K. Ultrastable calibrated light source. 3,670,202, Cl. 315-297.000
Johnston, Alan R. Light direction sensor. 3,670,168, Cl. 250-225.000
National Aeronautics and Space Administration: *See—*
Angele Wilhelm; and Martineck, Hans G., 3,670,290.
Jones, James L., 3,670,097.
Whipple, Douglas W.; and Blymiller, Earl R., 3,668,956.
Navy: *See—*
Altman, Daniel E., 3,669,548.
De Core, Fred; Peake, Thaddeus A.; and Marshall, Ted R., 3,668,768.
Folden, Virgil A., Jr.; and Miller, Johny, Jr., 3,669,311.
Hinton, Ray F., 3,669,912.
Krzycki, Leroy J., 3,668,868.
Lemaire, Irov P., 3,668,986.
Lindsay, George F.; Sullivan, Shelby F.; and Whitehouse, Harper John, 3,670,151.
Marez, John; and Hatch, Alan R., 3,670,102.

Spencer, John H.; Ramsey, Richard T.; and Gilbertson, Warren L., 3,669,021.
Starr, James B., 3,669,135.
Postmaster General: *See—*
Hogue, Ephraim W., 3,670,169.
Universal Oil Products Company: *See—*
Berger, Charles V., 3,669,876.
Cyba, Henryk A., 3,669,926.
Hall, Garth O., 3,668,870.
Lowe,Charles B., 3,669,400.
Mc Larty, Jack Lowrie, 3,669,782.
Sparks, Alle n K., 3,670,030.
Wager, John Stewart, 3,669,399.
Universal Railway Devices Company: *See—*
Natschke, Eldred H., 3,668,944.
University of Illinois Foundation: *See—*
Shier, Wayne Thomas; Rinehart, Kenneth L., Jr.; and Gottlieb, David, 3,669,838.
Updyke, Kenneth W.; and Grebner, William J., to Caterpillar Tractor Corporation. Hermetically sealed electrical fitting. 3,670,092, Cl. 174-152.00r
UR Industries, Inc.: *See—*
Werner, Ben E.; and Setty, Richard D., 3,669,308.
Uraneck, Carl A.: *See—*
Brown, James D.; and Uraneck, Carl A.,3,669,798.
Uren, Richard F.: *See—*
Woodside, Frank G.; and Uren, Richard F.,3,669,281.
U.S. Philips Corporation: *See—*
Hagen, Siegfried Hendrik, 3,670,214.
U.S. Plywood-Champion Papers Inc.: *See—*
Vassiliades, Anthony E.; Nauman, Edward F.; and Shroff, Shrenik, 3,669,899.
Usami, Kunihiko: *See—*
Takahashi, Tadanobu; and Usami, Kunihiko,3,669,519.
Usamoto, Teruyoshi; Yokota, Masao; and Kondo, Tamotu, to Sumitomo Chemical Company, Limited. Method for preparing colored rubber laminate. 3,669,828, Cl. 161-252.000
USM Corporation: *See—*
Appleton, Daniel, 3,670,070.
McLean, George F., Jr., 3,669,600.
Romeo, Vincent P., 3,669,309.
USV Pharmaceutical Corporation: *See—*
Elpern, Bill; and Shroff, James R., 3,669,974.
Utsugi, Mikio; and Ohta, Takahiro, to Fuji Photo Film Co., Ltd. Method of making plastic fiber-optical plates. 3,669,789, Cl. 156-182.000
Vacante, Matthew. Dual wheel steering means. 3,669,465, Cl. 280-87.00r
Vaccaro, Angelo, to Columbia Controls Research Corporation. Method and apparatus for standardizing densitometers. 3,669,543, Cl. 356-42.000
Vaillant, Joh., KG: *See—*
Meier, Hans; and Carouge, Frithjof, 3,669,351.
Vaisala Oy: *See—*
Kalliomaki, Kalevi Juhani; Tiuri, Martti Eelis; and Vakkila, Seppo Matti, 3,670,275.
Vakkila, Seppo Matti: *See—*
Kalliomaki, Kalevi Juhani; Tiuri, Martti Eelis; and Vakkila, Seppo Matti,3,670,275.
Valmet Oy: *See—*
Berg, Nils-Christian; and Soininen, Mauri Aatos, 3,668,787.
Valvassori, Alberto: *See—*
Cameli, Nazzareno; Longi, Paolo; Valvassori, Alberto; and Flisi, Umberto,3,670,055.
Valyi, Emery I. Method of compression molding a thermoplastic article with walls of variable thickness. 3,670,066, Cl. 264-148.000
Van Arsdale, Lyle R.: *See—*
Grove, Marvin H.; and Van Arsdale, Lyle R.,3,668,923.
Van Blaricon, Orville B.: *See—*
Divecha, Amarnath P.; Lare, Paul J.; Ordway, Fred, Jr.; Hermann, Robert A.; Van Blaricon, Orville B.; and Hahn, Henry,3,668,748.
Van Den Heuvel, Anthony P.: *See—*
Dahn, Carl James; and Van Den Heuvel, Anthony P.,3,669,022.
van der Veen, Romke, to N.V. Ingeieursbureau voor Systemen en Octrooien Spanstaal. Suction dredging installation. 3,669,140, Cl. 137-334.000
Van Dyck, Kenneth: *See—*
Wyatt, James B.; George, Peter D.; and Van Dyck, Kenneth,3,669,104.
Van Eck, Jack M.: *See—*
Savit, Joseph; Guzik, Rudolph P.; Wayne, Harry A.; Saklikar, Arvind R.; and Van Eck, Jack M.,3,669,073.
Van Kreuningen, Rudolf, to Explosive Technology. Electronically controlled pyrotechnic crew escape system and method. 3,669,388, Cl. 244-138.00r
Van Leer (U.K.), Limited: *See—*
Zuideveld, Reindert, 3,669,061.
Vann Industries, Inc.: *See—*
Jones, Donald E., 3,669,428.
Van Namen, Frederik Tjado, to Singer Company, The. Card handling apparatus for cards in data processing machines. 3,669,444, Cl. 271-3.000
van Staveren, Pieter, to Nederlandse Organisatie Voor Tolgepast-Natuurweten Schappelijk Ondeszoek Ten Behowe Van Nijvirheid. Compressor gas turbine installation. 3,668,867, Cl. 60-39.280
Van Westrenen, William J.; De Carpentier, Pieter; and Nieuwenhuis, Willem H. M., to Shell Oil Company. Copolymers of vinyl esters of branched acids. 3,669,942, Cl. 260-78.50r
Varityper Corporation: *See—*
Pitman, Richard W., 3,669,236.
Varnerin, Lawrence J., Jr.: *See—*
Hackett, William H., Jr.; Schafetter, Donald L.; and Varnerin, Lawrence J., Jr.,3,669,767.
Vasile, Carmine F., to Hazeltine Corporation. Two port magnetoelastic delay line. 3,670,271, Cl. 333-30.000
Vassiliades, Anthony E.; Nauman, Edward F.; and Shroff, Shrenik, to U.S. Plywood-Champion Papers Inc. Microcapsular opacifier system. 3,669,899, Cl. 252-316.000
Vaughan & Bushnell Mfg. Co.: *See—*
Parks, Worthel C., 3,669,512.
VEB Stickstoffwerk Piesteritz: *See—*
Zobel, Dietmar, 3,669,622.
Vecbastiks, Ivars: *See—*
Trevillyan, Alvin E.; and Vecbastiks, Ivars,3,670,003.
Veisky, Stanislav Petrovich: *See—*
Maranchak, Vasily Makarovich; Novella, Vladimir Nikolaevich; and Veisky, Stanislav Petrovich,3,670,240.
Velasquez, Willie. Shield attachment for safety helmets. 3,668,706, Cl. 2-10.000
Velsicol Chemical Corporation: *See—*
Kahn, Henry; and Hokama, Takeo, 3,669,947.
Velten & Pulver, Inc.: *See—*
Pulver, Willis Clark, 3,669,247.
Vendo Company, The: *See—*
Breeden, James A., 3,669,235.
Venture Enterprises, Inc.: *See—*
Serebrin, David, 3,669,129.
Venturini, Piero: *See—*
De Nicolay, Giuliano; and Venturini, Piero,3,670,255.
Veriflo Corporation: *See—*
Sundblom, Leif J.; and Ollivier, Louis A., 3,669,108.
Vermette, Clifford, to Schlumberger Technology Corporation. Industrial technique. 3,670,185, Cl. 307-304.000
Veron, Harry, to Sperry Rand Corporation. Gas discharge display device with perimetrical cathode. 3,670,201, Cl. 315-169.0tv
Vertegaal, Jacobus G., to Stork Amsterdam N.V. Device for making a longitudinal cut into the neck of poultry. 3,668,738, Cl. 17-11.
Vet Line Products, Inc.: *See—*
Hamrick, James C.; and Ruddick, Howard G., 3,669,087.
Vicard, Pierre. Electrostatic dust separator. 3,668,835, Cl. 55-107.000
Vilcins, Ilmar J.; and Frey, Robert J., to Signode Corporation. Electrically controlled hand tool for friction- fusing non-metallic strap. 3,669,799, Cl. 156-359.000
Virginia Chemicals Inc.: *See—*
Murray, William Bruce; Kise, Mearl A.; and Kelly, Thomas Edward, 3,669,616.
Shastri, Shiri, 3,669,895.
Virginio Rimoldi & Co., S.p.A.: *See—*
Marforio, Nerino, 3,669,049.
Virloget, Jean Marcel, to Societe Francaise d'Instruments de Controls et d'Analyses. Device for spectographic analysis of a liquid metal. 3,669,546, Cl. 356-86.
Virsberg, Lars-Goran: *See—*
Andersson, Anders R.; and Virsberg, Lars-Goran,3,670,192.
Vivian, Thomas A., to Dow Chemical Company, The. Stabilized methylene chloride for high temperature applications. 3,670,036, Cl. 260-652.50r
Vogel, Paul: *See—*
Polin, Herbert S.; and Kuhn, Gustavo, 3,668,859.
Voitsekhovsky, Bogdan Vyacheslavovich; Kuvshinov, Viktor Alexandrovich; Plaxin, Vladimir Nikolaevich; and Nevsky, Vyacheslav Alexandrovich. Method of stamping metal convex articles from sheets. 3,668,914, Cl. 72-57.000
Von Ohlsen, Louis H., Jr.: *See—*
Beadle, William E.; Benson, Kenneth E.; Mathews, James R.; and Von Ohlsen, Louis H., Jr.,3,669,768.
Von Rudgisch, Edgar. Upholstered seating furniture. 3,669,495, Cl. 297-445.000
Voros, Anton, Jr. Electromagnetic reciprocating motor. 3,670,188, Cl. 310-17.000
Voss, Siegfried: *See—*
Renz, Eberhard; Voss, Siegfried; and Ecke, Gunter,3,668,725.
Vowles, J. Harding. Chair. 3,669,493, Cl. 297-429.000
Wachtel, Anselm, to Westinghouse Electric Corporation. Divalent europium activated alkaline earth metal sulfates and method of preparation. 3,669,897, Cl. 252-301.40s
Wada, Ryuji; Suzuki, Hiroshi; and Nakato, Masuo, to Toyoda Koki Kabushiki Kaisha (trading as Toyoda Machine Works, Ltd.). Gaseous bearing with stabilizer. 3,669,514, Cl. 308-9.000
Wada, Yuichi: *See—*
Itoh, Toshio; Miyamoto, Toshio; and Wada, Yuichi,3,670,282.
Wade, Ronald A.: *See—*
Marquardt, Julius F.; and Wade, Ronald A.,3,668,794.
Wagenseil, Ludwig, to Constantin Rauch. Apparatus for controlling the delivery quantity of adjustable axial piston pumps. 3,669,569, Cl. 417-222.000

Wager, John Stewart, to Universal Oil Products Company. Mechanism for the tiltable seat of a chair. 3,669,399, Cl. 248-373.000

Wagner Electric Corporation: *See—*
Atkins, Carl E., 3,670,178.
Brandi, Henry W., 3,669,259.
Falk, Edward J., 3,669,505.
Papin, Joseph E.; and Stokes, Stanley L., 3,669,506.
Stokes, Stanley L., 3,669,504.
Stokes, Stanley L., 3,669,507.

Wagner, Robert L.; and Ragland, Evan L., II, to American Regitel Corporation. Double helical printer. 3,669,237, Cl. 197-49.000

Waite, Hal R.; and Lucy, Carl F., to Ordnance Research Incorporated. Firebomb igniter devices and components therefor. 3,669,020, Cl. 102-6.000

Wakai, Shuzo, to Matsushita Electronics Corporation. Astable multivibrator. 3,670,264, Cl. 331-113.00r

Walach, Augustyn Z.: *See—*
Rooney, James J.; and Walach, Augustyn Z.,3,670,230.

Walbridge, Derek John: *See—*
Baker, Alan Stuart; and Walbridge, Derek John,3,669,939.

Walchle, David L.; and Schmidt, Peter J., to Xomox Corporation. Method of manufacture of a coated valving member. 3,670,071, Cl. 264-273.000

Waldman, Jan. Mixing and dispensing apparatus. 3,669,358, Cl. 222-129.000

Waldo, Pharez, G.: *See—*
Plank, Charles J.; Waldo, Pharez, G.; and Doherty, Harry G.,3,669,875.

Waldorff, Jorgen Frederik, to Danfoss A/S. Gearwheel machine. 3,668,947, Cl. 74-804.000

Walker, Darrell W.: *See—*
Drehman, Lewis E.; and Walker, Darrell W.,3,670,044.

Walker, Ernest L.: *See—*
Beausoleil, William F.; Brown, David T.; and Walker, Ernest L.,3,670,313.

Walker, Raymond W., to Deep Oil Technology, Inc. Power wrench for making underwater pipe connections. 3,668,949, Cl. 81-57.130

Wallace, Forrest E. Dispensing device for dry wall tape and joint cement. 3,669,070, Cl. 118-102.000

Wallis, Bernard J. De-stacking device for sheet metal blanks. 3,669,445, Cl. 271-26.000

Walters, Arthur Gwynfryn. Rocket launchers. 3,668,970, Cl. 89-1.819

Wang, Chih-Chung, to Kennecott Copper Corporation. Method and apparatus for continuous casting with gyrating mold. 3,669,182, Cl. 164-83.000

Ward, Ronald C.: *See—*
Briggs, John A.; and Ward, Ronald C.,3,670,100.

Warn, Kermit W.: *See—*
Scharmann, Garred N.; Warn, Kermit W.; and Mortensen, Donald G.,3,668,730.

Warner, Wesley John, to Northern Electric Company Limited. Telephone line transfer circuit using disjoint routing network for partial decoding. 3,670,110, Cl. 179-18.0ad

Warthen, John L.; and Cheavens, Thomas H., to Grace, W. R., & Co. Process for producing high average pore volume silica. 3,669,624, Cl. 23-182.00r

Wasson, Frank R., Jr.: *See—*
Rattman, William J.; Wasson, Frank R., Jr.; and Mackenzie, Gordon C.,3,669,540.

Watanabe, Genji: *See—*
Shiobara, Masaji; and Watanabe, Genji,3,669,424.

Watanabe, Yoshihachi; and Ogata, Masaru, to Shionogi & Co., Ltd. Method of controlling rice blast and sheath blight disease with 3,4-dichloro-6-hydroxyimi- nomethylpyridazine-1-oxide. 3,670,082, Cl. 424-250.

Waters, Peter Donald, to Callard & Bowser Limited. Manufacture of toffee and similar products. 3,669,030, Cl. 107-54.00f

Watkins, Howard G.: *See—*
Nicholas, George E.; and Watkins, Howard G.,3,668,828.

Watkinson, Leonard James; and Moore, Brian Joseph, to Howson, W. H., Limited. Presensitized printing plate coated with colorant. 3,669,668, Cl. 96-86.00p

Watson, Frank G. Order transfer assembly for preventing holdups. 3,669,038, Cl. 109-12.

Watts, Frank M.: *See—*
Frank, Peter M.; and Watts, Frank M.,3,668,830.

Wayland, Paul O.: *See—*
Cherry, Sidney J.; Bereza, Albert; and Wayland, Paul O.,3,670,129.

Wayne, Harry A.: *See—*
Savit, Joseph; Guzik, Rudolph P.; Wayne, Harry A.; Saklikar, Arvind R.; and Van Eck, Jack M.,3,669,073.

Wayne Manufacturing Company: *See—*
Scharmann, Garred N.; Warn, Kermit W.; and Mortensen, Donald G.,3,668,730.

Wayson, Andrew J.; and DeStefano, Richard T., to Merriman, Inc. Means for supplying a plurality of spinning rings with fluid lubricant. 3,669,219, Cl. 184-7.00a

Wazumi, Seiichi, to Minolta Camera Company Limited. Camera flash indicating system. 3,668,985, Cl. 95-10.

Wean Industries, Inc.: *See—*
Ledebur, Harry C., 3,668,916.

Weatherhead Company, The: *See—*
Mundt, James E.; and Powell, Milan, 3,669,407.

Weaver, Cletus. Pipe cap. 3,669,153, Cl. 138-89.

Weaver, Elmer A. Process for flavoring foods. 3,669,684, Cl. 99-100.000

Weaver, Merle L.; and Hautala, Earl, to United States of America, Agriculture. Preparation of fried potato products. 3,669,685, Cl. 99-103.000

Weber, Rudolf; and Jahn, Emil, to International Standard Electric Corporation. Arrangement for lubricating the perforating pins of tape and card perforators. 3,668,960, Cl. 83-169.000

Wedler, Herbert: *See—*
Burkhardt, Walter; and Wedler, Herbert,3,669,230.

Wegmuller, Hans; Kleemann, Alois; and Keller, Rudolf, to Ciba-Geigy AG. Process for coloring natural and synthetic polyamide fibers in the presence of imidazoline compounds. 3,669,608, Cl. 8-54.000

Weichel, Ernst. Apparatus for harvesting cereal grains, leafy vegetables or hoed vegetables. 3,669,192, Cl. 171-40.000

Weinfurt, Edward J.: *See—*
Pandjiris, Anthony K.; Frederick, Arthur I.; and Weinfurt, Edward J.,3,670,139.

Weirauch, Kurt: *See—*
Senge, Ferdinand; Weirauch, Kurt; and Bottenbruch, Ludwig,3,670,051.

Weisel, Harold C.: *See—*
Faigenbaum, Mark A.; Lasky, Daniel J.; and Weisel, Harold C.,3,669,665.

Weiss, Alvin. Automatic electric self-synchronizing polarizing windows. 3,669,526, Cl. 350-159.000

Welbourn, Dale K. Catapult game including striking mallet and receiver. 3,669,451, Cl. 273-95.00r

Wenninger, Johann: *See—*
Hoelzinger, Walther J.; Wenninger, Johann; Mayer, Walter; Zoegernitz, Karl; Schroetter, Hermann; and Braun, Werner,3,669,064.

Wenstrom, Roger A.: *See—*
Holes, William W.; and Wenstrom, Roger A.,3,669,555.

Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See—*
Daume, Eduard; and Breitenmoser, Jurg, 3,669,924.

Werner, Ben E.; and Setty, Richard D., to UR Industries, Inc. Transfer assembly for cylindrical members. 3,669,308, Cl. 221-119.

Werner, Charles R., to Werner Lehara, Inc. Apparatus for filling molded cookies. 3,669,587, Cl. 425-112.

Werner Lehara, Inc.: *See—*
Werner, Charles R., 3,669,587.

Wernicke, Hans-Joachim, to Messer Griesheim GmbH. Holder for an oxygen supply pipe. 3,669,437, Cl. 266-34.01m

Weslock, Ernest A., to Sturges Company, The. Ganging device. 3,669,491, Cl. 297-248.000

West Bridgford Machine Co., Limited: *See—*
Peet, James, 3,668,900.

Western Electric Company, Incorporated: *See—*
Baldwin, Wiley M.; and Monroe, Raymond, Jr., 3,669,635.
Coucoulas, Alexander, 3,669,333.
Cushman, Robert Holbrook, 3,669,806.
Jensen, Harold R., 3,670,209.

Western Gear Corporation: *See—*
Blanchet, James P.; Hotes, Charles M.; and Reynolds, Thomas J., 3,669,329.

Western Geophysical Company of America: *See—*
Mollere, John C., 3,669,213.

Westinghouse Electric Corporation: *See—*
Attridge, John T., 3,670,142.
Cherry, Sidney J.; Bereza, Albert; and Wayland, Paul O., 3,670,129.
De Corso, Serafino M.; and Jersey, Chester A., 3,668,869.
Fahey, Thomas M.; and Mentzell, John C., 3,668,946.
Foster, Karl; and Seidel, Joseph, 3,670,278.
Gaheen, Alfred F., Jr., 3,670,334.
Jansen, Robert A., 3,669,520.
Johnson, James C.; and Neider-Westermann, Winfried, 3,668,998.
Keto, August I., 3,670,287.
McNally, John M.; and Molette, Albert H., Jr., 3,669,562.
Millsop, William Q.; Ellis, Belvin B.; and Burkhardt, Charles E., 3,670,279.
Page, Derrick J.; and Raygor, Paul O., 3,669,060.
Page, Derrick J.; and Driver, Michael C., 3,669,661.
Roidt, Robert M., 3,670,126.
Schuster, Donald R., 3,669,170.
Thornton, William A., Jr.; and Unglert, Melvin C., 3,670,194.
Ulich, Michael D., 3,669,477.
Wachtel, Anselm, 3,669,897.

Westlin, Karl L.; and Getzin, Allan R., to American Air Filter Company, Inc. Filter support construction. 3,668,843, Cl. 55-501.000

Weston, Norma Ann: *See—*
Susi, Peter Vincent; and Weston, Norma Ann,3,670,025.

Westvaco Corporation: *See—*
Hughes, William W., 3,669,341.

Wetzler, Justin J. Mattress support structure. 3,668,720, Cl. 5-91.

Weyerhaeuser Company: *See—*
Hanko, Jimmy J., 3,669,253.
Robinson, Ray M., 3,669,336.

Weyker, Robert George; Baitinger, William Frederick, Jr.; and De Marco, John Gregory, to American Cyanamid Company. N-Methylolacrylamide textile finish containing citric acid or dicyandiamide. 3,669,609, Cl. 8-116.300

Wheeler, Phillip R.: *See—*
Ruff, John D.; and Wheeler, Phillip R.,3,668,883.

Wheeler, Robert Charles: *See—*
Arumugham, Rangaswamy; and Wheeler, Robert Charles,3,670,095.

Wheeler, Robert G., to Wood Processes, Oregon Ltd. Method of forming a panel with a rough textured, printed surface. 3,669,783, Cl. 156-90.000

Wheelock, Charles E., to International Business Machines Corporation. Long-wearing silver-halide gelatin offset printing plate. 3,669,018, Cl. 101-456.000

Wheelock, Charles E., to International Business Machines Corporation. Preparation of silver halide grains and photographic emulsions. 3,669,663, Cl. 96-94.000

Whipple, Douglas W.; and Blymiller, Earl R., to United States of America, National Aeronautics and Space Administration. Microcircuit negative cutter. 3,668,956, Cl. 83-8.000

Whirlpool Corporation: *See—*
Zenz, Fred J., 3,670,143.

White, Alan: *See—*
Davey, Ronald E.; Tomlinson, Charles N.; and White, Alan,3,669,826.

White, Billy C. Automatic temperature control apparatus for poultry houses and the like. 3,669,350, Cl. 236-49.000

White Farm Equipment Company: *See—*
Ronayne, Ronald J.; and Ketterling, Edwin, 3,669,229.

White, Morris, Fashions, Inc.: *See—*
Lubliner, Milton, 3,669,169.

White, Richard N.; and Wilkin, Joseph D., to Celotex Corporation, The, mesne. Suspended ceiling system. 3,668,826, Cl. 52-28.000

White, William A., to Lilly, Eli, and Company. 1-Lower alkyl or alkylene substituted-6,7- methylenedioxy-4(1H)-oxocinnoline-3-carboxylic acids and methods for making and using same. 3,669,965, Cl. 260-250.00a

Whitehouse, Dale S.: *See—*
Cooper, Hugh; Whitehouse, Dale S.; and Womble, George E.,3,669,193.

Whitehouse, Harper John: *See—*
Lindsay, George F.; Sullivan, Shelby F.; and Whitehouse, Harper John,3,670,151.

Whitehouse, Robert George, to Ferro Corporation. Furnaces. 3,669,426, Cl. 263-8.00r

Whitfield, George Robert: *See—*
Fellgett, Peter Berners; and Whitfield, George Robert,3,669,207.

Whitmore, Thomas C., Jr.; and Cunningham, Robert G., to Eastman Kodak Company. Method of and apparatus for imparting an electrical charge to a web of film or paper or the like. 3,670,203, Cl. 317-2.00r

Wieme, Andre A., to N.V. Bekaert S.A. Method for making fluid channels. 3,668,756, Cl. 29-157.00r

Wierzbicki, John R.: *See—*
Amdahl, Gene M.; Arnold, Richard F.; Dauber, Philip S.; Freiman, Charles V.; Robelen, Russell J.; Schorr, Herbert; and Wierzbicki, John R.,3,670,309.
Arnold, Richard F.; Dauber, Philip S.; Freiman, Charles V.; Robelen, Russell J.; and Wierzbicki, John R.,3,670,307.

Wiggers, Verlin: *See—*
Gaeddert, Melvin V.; and Wiggers, Verlin,3,669,123.

Wiggins, E. B., Inc.: *See—*
Nadsady, Clarence A., 3,669,472.

Wiker, Frank: *See—*
Rupprecht, Charles F.; and Wiker, Frank,3,668,955.

Wiley, Donald Field, to Cosden Oil & Chemical Company. Plating of polystyrene. 3,669,714, Cl. 117-47.

Wilkens, Seymour; and Trunk, Edmund G., to Staver Company, Incorporated, The. Heat dissipator for integrated circuit. 3,670,215, Cl. 317-234.

Wilkin, Joseph D.: *See—*
White, Richard N.; and Wilkin, Joseph D.,3,668,826.

Wilks Scientific Corporation: *See—*
Gilby, Anthony C., 3,669,545.

Williams, Gathalee H.Lady's headpiece. 3,668,707, Cl. 2-207.000

Williams, Stanley C., to Dominion Engineering Works, Limited. Broke receiver chamber for the dryer section of a papermaking machine. 3,669,830, Cl. 162-264.000

Willinger, Allan H., to Metaframe Corporation. Automatic siphoning filtration device. 3,669,297, Cl. 210-169.000

Wilson & Longbottom Limited: *See—*
Porter, Ian S., 3,669,156.

Wilson, Denney R., to Dana Corporation. Selective front wheel drive hub. 3,669,476, Cl. 287-53.00r

Wilson, James H.: *See—*
Priestley, Hill M.; and Wilson, James H.,3,670,027.

Wilton Corporation: *See—*
Kartasuk, Ray; and Gloridso, Ray, 3,669,440.

Wilton, Raymond C., to Singer Company, The. Variable terrain model. 3,668,790, Cl. 35-12.00n

Wilwood Inc.: *See—*
Woods, Warren L., 3,669,276.

Windish, Willis E.: *See—*
Rohweder, Gerald D.; and Windish, Willis E.,3,669,232.

Windmoller & Holscher: *See—*
Feldkamper, Richard, 3,669,802.

Winkler & Dunnebier Maschinenfabrik und Eisen- gieberei: *See—*
Stemmler, Kurt, 3,668,982.

Winkler, Alfred; Theer, Anton; Zanner, Johann; and Hennig, Fridolin, to Agfa-Gevaert Aktiengesellschaft. Camera operating device. 3,668,989, Cl. 95-11.00r

Winn, Oliver H., to General Electric Company. Automatic sweep electronic counter measures system. 3,670,333, Cl. 343-18.

Winstead, Thomas W. Method of producing a skin-covered foamed thermoplastic. 3,670,059, Cl. 264-48.000

Winston, Emanuel A. Elastic band loaded toy. 3,668,804, Cl. 46-17.

Winters, Earl D., to Bell Telephone Laboratories, Incorporated. Electroplating gold. 3,669,852, Cl. 204-46.000

Winters, Terry L.: *See—*
Schrading, Mark S.; and Winters, Terry L.,3,669,106.

Witkin, Donald E., to National Forge Company. Undercut thread closure. 3,669,301, Cl. 220-39.

Witzenburg, Martion J., to Caterpillar Tractor Company. Water pump seal. 3,669,458, Cl. 277-38.000

Wolf, Milton: *See—*
Bogash, Richard; Wolf, Milton; and Sellstedt, John H.,3,669,980.

Wolff Walsrode Aktiengesellschaft: *See—*
Jager, Eugen, 3,669,721.

Wolofski, Nicholas: *See—*
Meyers, John S.; and Wolofski, Nicholas,3,669,498.

Wolverine-Pentronix, Inc.: *See—*
Smith, Joseph E., 3,669,582.

Womble, George E.: *See—*
Cooper, Hugh; Whitehouse, Dale S.; and Womble, George E.,3,669,193.

Wong, Robert; and Hill, Homer G., to Owens-Corning Fiberglas Corporation. Method of producing bonded randomly oriented glass fiber mats and batts. 3,669,638, Cl. 65-3.000

Wong, Thomas S.: *See—*
Shoaf, Myron D.; Ketch, Frederick M.; and Wong, Thomas S.,3,669,681.

Wood, Dennis E., to Curlator Corporation. Non-woven web. 3,669,823, Cl. 161-141.000

Wood Processes, Oregon Ltd.: *See—*
Wheeler, Robert G., 3,669,783.

Woodall, Hubert C., Jr.; Freeman, Horace L.; and Goodman, Noah C., to Carolina Narrow Fabric Company. Shrinkable tubular fabric. 3,669,157, Cl. 139-387.

Woodman Company, Inc., The: *See—*
Henry, Nelson R.; and Middour, Donald R., 3,668,815.

Woods, Warren L., to Wilwood Inc. Shoe display bag and system. 3,669,276, Cl. 211-34.000

Woodside, Frank G.; and Uren, Richard F., said Uren assor. to said Woodside. Vehicle mounted hoist. 3,669,281, Cl. 212-144.000

Wooten, Robert D.; Neal, Warren D.; and Einfeldt, George J., to Aerojet-General Corporation. Tilt type conveyors. 3,669,245, Cl. 198-155.

Wright, John F.; and Rubin, Bruce J., to Eastman Kodak Company. Electrically insulating carrier particles. 3,669,885, Cl. 252-62.100

Wright, John H., to General Electric Company. Methyl alkyl silicone grease containing zinc naphthenate. 3,669,884, Cl. 252-36.000

Wright, Leon W.: *See—*
Capik, Robert J.; and Wright, Leon W.,3,670,035.

Wright, Richard B. Electronic instrument for determing and totalizing the repetitive operation of a material fabricating machine. 3,670,147, Cl. 235-92.00j

Wrobel, Donald P.: *See—*
Fortier, Jean R.; and Wrobel, Donald P.,3,670,284.

Wuerstlin, Franz; Feichtmayr, Franz; and Eilingsfeld, Heinz, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Electrical insulating materials based on olefin polymers. 3,669,888, Cl. 252-63.200

Wunder, Friedrich: *See—*
Fernholz, Hans; Schmidt, Hans-Joachim; and Wunder, Friedrich,3,670,014.

Wurmbrand, Mihai; and Doane, John L. Arc plasma propulsion system. 3,669,056, Cl. 115-12.00r

Wyandotte Chemicals Corporation: *See—*
Jackel, Simon S., 3,669,683.

Wyatt, James B.; George, Peter D.; and Van Dyck, Kenneth, to Pfizer Inc. Implant gun. 3,669,104, Cl. 128-217.000

Wyman-Gordon Company: *See—*
Grankowski, Eugene E.; and Pappas, Lambros A., 3,668,920.

Wysong, Paul V., to Schrillo Company. screw seal. 3,669,460, Cl. 277-24.000

Wyss, Escher Limited: *See—*
Kaiser, Friedrich, 3,669,404.

Xerox Corporation: *See—*
Adams, James E.; and Haas, Werner E. L., 3,669,525.
Davis, Robert A., 3,668,963.
Reynolds, Robert W.; Bibeau, James K.; and Jansen, Francis J., 3,669,072.
Smith, Carl E., 3,669,066.
Starr, Arthur T.; and Edwards, David G., 3,670,269.
Tulagin, Vsevolod, 3,669,872.
Turner, Lyman H.; and Manzek, Rhinehart A., 3,669,447.

Xomox Corporation: *See—*
Walchle, David L.; and Schmidt, Peter J., 3,670,071.

Yaker, Charles: *See—*
Ingalls, John E.; and Yaker, Charles,3,669,177.

Yamada, Koichiro: *See—*
Hohsho, Yukio; Yamada, Koichiro; Oyama, Yoshishige; Teranishi, Takao; and Suzuki, Seikou,3,669,423.

Yamada, Seibi; and Takizawa, Haruki, to Teijin Limited. Melt-spinning apparatus. 3,669,584, Cl. 18-8.
Yamada, Tetsuya: *See—*
Inoue, Touru; Yamada, Tetsuya; and Noguichi, Seizo,3,669,639.
Yamamoto, Akira; and Moriyama, Keiichi, to Teijin Limited. Method of cleaning polyamide producing apparatus. 3,669,740, Cl. 134-22.000
Yamamoto, Hiroyuki: *See—*
Nakao, Osakazu; Nakagawa, Saburo; Hirose, Juichi; Yamazaki, Shigeyuki; Amano, Takashi; Nakamura, Toshio; and Yamamoto, Hiroyuki,3,669,916.
Yamamoto, Hisao: *See—*
Okamoto, Tadashi; Kobayashi, Tsuyoshi; and Yamamoto, Hisao,3,669,960.
Yamamoto, Sigeo: *See—*
Tsuchiya, Hiroshi; Kunio, Nishinomiya-Shi; Kimura, Akio; Kawano, Suminori; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Okuno, Yositosi; Tanaka, Katsutoshi; Ooishi, Tadashi; and Takeda, Hisami,3,670,057.
Yamamoto, Toshiaki: *See—*
Tabuchi, Ichiro; Iwami, Akira; Harita, Yasuhiro; and Yamamoto, Toshiaki,3,669,284.
Yamatodani, Saburo: *See—*
Nakao, Yoshio; Kuno, Mitsuzo; Yamatodani, Saburo; Tanaka, Fumihiko; and Nojiri, Tsutomu,3,669,836.
Yamazaki, Shigeyuki: *See—*
Nakao, Osakazu; Nakagawa, Saburo; Hirose, Juichi; Yamazaki, Shigeyuki; Amano, Takashi; Nakamura, Toshio; and Yamamoto, Hiroyuki,3,669,916.
Yanagidaira, Hidetaka: *See—*
Shintani, Sotokichi; Kawai, Kazuo; and Yanagidaira, Hidetaka,3,670,251.
Yancey, Le Roy D., to Major Corporation. Electric switchboard with rocker movable contact mounted on a wheel. 3,670,117, Cl. 200-16.00c
Yang, Harold S.: *See—*
Matthews, Richard D.; Halfhill, Martin O.; Sordello, Frank J.; and Yang, Harold S.,3,670,316.
Yare, Robert S.: *See—*
Panzer, Hans P.; Yare, Robert S.; and Forbes, Malcolm R.,3,669,679.
Yasui, Hideo: *See—*
Suzuki, Ichizo; Yasui, Hideo; and Nanba, Kazuhiko,3,669,696.
Yasunaga, Hidetoshi: *See—*
Komatsu, Koei; Okuya, Eitaro; Tomioka, Katsuyoshi; Sakai, Masato; Hayashi, Shigeki; Yasunaga, Hidetoshi; and Kogure, Akira,3,669,943.
Yasunaga, Masahiro: *See—*
Niwa, Kunimori; Shibai, Hiroshiro; Yasunaga, Masahiro; Hirose, Yoshio; and Shiro, Teruo,3,669,844.
Yates, Dick: *See—*
Beach, Horace J.; En Dean, Howard J.; Frawley, Frank E.; and Yates, Dick,3,669,700.
Yavitch, Morris. Fastener assembly. 3,669,171, Cl. 151-44.000
Yazawa, Masahide; and Tani, Haruhisa, to Polymer Processing Research Institute Ltd. Method for making a laminated body of pliable thin layer materials. 3,669,795, Cl. 156-265.000
Yoda, Naoya: *See—*
Asahara, Tomohiko; Yoda, Naoya; and Minami, Nuneyoshi,3,669,930.
Yokota, Masao: *See—*
Usamoto, Teruyoshi; Yokota, Masao; and Kondo, Tamotu,3,669,828.
Yokota, Tadashi; and Asai, Taizo, to Nippon Cloth Industry Co., Ltd. Process for preparing a soft and tenacious non- woven fabric. 3,669,784, Cl. 156-148.000
Yonezawa, Teruhiko; Kobayashi, Kesanao; and Kobayashi, Teruo, to Fuji Photo Film Co., Ltd. Photosensitive printing plate. 3,669,658, Cl. 96-33.
York, Leonard Ernest: *See—*
Dunn, Geoffrey Bernard; and York, Leonard Ernest,3,669,048.
York, William A. Breakaway athletic safety shoe. 3,668,792, Cl. 36-59.00r
Yoshida, Saburo: *See—*
Shimauchi, Shiro; Yoshida, Saburo; and Muro, Koji,3,669,611.
Yoshii, Tetsuji, to Matsushita Electric Industrial Co., Ltd. Slip-clutch. 3,668,894, Cl. 64-30.00r
Yoshitake, Juichi: *See—*
Imai, Tomio; Shimamura, Mutsuo; Yoshitake, Juichi; and Ohiwa, Hitoshi,3,669,845.
Young, Charles Gilbert, to American Optical Corporation. Double Q-switch laser. 3,670,259, Cl. 331-94.500
Young, Maurice A., to Dunlop Holdings Limited. Pneumatic tires. 3,669,173, Cl. 152-361.000
Young, Richard A.: *See—*
Hall, Roger P.; Pratt, Ivor; and Young, Richard A.,3,669,796.
Young, Richard N.: *See—*
Newcomb, Arthur L., Jr.; and Young, Richard N.,3,670,253.
Young, Robert R., to Kaiser Industries Corporation. Method of handling and storing containers at a shipping terminal. 3,669,288, Cl. 214-152.000
Young, William P.; and Halgren, John A., to International Harvester Company. Carburizing steels containing chromium. 3,669,652, Cl. 75-126.00c
Youngblood, Donald A. Combination cartridge containing removable tape magazine and removable filmstrip holder. 3,669,531, Cl. 352-31.000
Youngman, Carl A.: *See—*
Howell, Eddie P.; Youngman, Carl A.; Hardison, Jack E.; and Tribble, Robert E.,3,668,927.
Youngstown Sheet and Tube Company: *See—*
Cullen, Roy H.; Aker, Jimmie R.; and Burke, William E., 3,669,199.
Zackheim, Eli A., to Silver, Jules. Balling gun. 3,669,310, Cl. 221-279.000
Zacks, Kenneth I.: *See—*
Sarsten, Jan A.; Zacks, Kenneth I.; and Myers, Michael C.,3,668,882.
Zajacek, John G.: *See—*
Sheng, Ming Nan; and Zajacek, John G.,3,670,002.
Zanker, Klaus Joachim; and Harrison, Derrick Norman, to Kent Instruments Limited. Measuring the velocity of flow of an electrically conductive fluid. 3,668,931, Cl. 73-181.000
Zanner, Johann: *See—*
Winkler, Alfred; Theer, Anton; Zanner, Johann; and Hennig, Fridolin,3,668,989.
Zaphiris, Peter C. Automatic sprinkler system. 3,669,352, Cl. 239-70.000
Zecher, Wilfred; and Merten, Rudolf, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of polyimides. 3,669,937, Cl. 260-77.50r
Zeiss, Otto, to Benckiser, Joh A., G.m.b.H. Process of producing difficulty soluble metal gluconates. 3,670,000, Cl. 260-439.00r
Zellmer, Neale A.; and Johnson, Wayne B., to GTE Automatic Electric Laboratories Incorporated. DC to DC converter. 3,670,233, Cl. 323-17.000
Zeluff, Wendell C.: *See—*
Schmiege, Lester C.; and Zeluff, Wendell C.,3,670,138.
Zenith Radio Corporation: *See—*
Knowles, Terence J.; and Eaton, Daniel A., 3,669,860.
Korpel, Adrianus, 3,670,098.
Kun, Zoltan K.; and Robinson, Robert J., 3,670,220.
Lerner, Martin L., 3,669,771.
Sobel, Alan; and Markin, Joseph, 3,670,323.
Zenz, Fred J., to Whirlpool Corporation. Electric heating unit for clothes dryers. 3,670,143, Cl. 219-375.000
Zimmermann, Walter. Apparatus for handling and processing currents of gas-borne dry soft powders. 3,669,503, Cl. 302-64.000
Zinck, Petersen, Jorgen; and Lundovist, Bertil, to Allmanna Svenska Elektriska Aktiebolaget. Arrangement for supplying energy to devices as high potential, for example for operating purposes. 3,670,175, Cl. 307-64.000
Zippel, Bernd; and Schlieckmann, Alfred, to Zippel, Richard, & Co. KG. Moulding apparatus. 3,669,595, Cl. 425-188.
Zippel, Richard, & Co. KG: *See—*
Zippel, Bernd; and Schlieckmann, Alfred, 3,669,595.
Zobel, Dietmar, to VEB Stickstoffwerk Piesteritz. Process for the preparation of condensed phosphates. 3,669,622, Cl. 23-197.
Zoecon Corporation: *See—*
Calame, Jean Pierre; and Siddall, John B., 3,669,997.
Zoegernitz, Karl: *See—*
Hoelzinger, Walther J.; Wenninger, Johann; Mayer, Walter; Zoegernitz, Karl; Schroetter, Hermann; and Braun, Werner,3,669,064.
Zuech, Ernest A.: *See—*
Kubicek, Donald H.; and Zuech, Ernest A.,3,670,043.
Zuideveld, Reindert, to Van Leer (U.K.), Limited. Apparatus for applying reactive adhesive. 3,669,061, Cl. 118-7.000
Zuppinger, Paul: *See—*
Reber, Willy Ernst; Nigst, Henry; Haas, Josef; Batzer, Hans; and Zuppinger, Paul,3,669,708.
Zurek, James W., to International Harvester Company. Side shifting implement apparatus. 3,669,194, Cl. 172-280.000
Zvanut, Albert J., to Stoody Company. Arc welding electrode and process for stainless steel. 3,670,135, Cl. 219-137.000
Zweig, Arnold: *See—*
Calusen, Victor H.; and Zweig, Arnold,3,669,804.
Jarvis, Richard L.; Kully, Walter; Calusen, Victor H.; Zweig, Arnold; and Engvoll, Sverre,3,669,803.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF JUNE, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Butler, Michael B. N.: *See*—
Sandbank, Carl P., and Butler. Re. 27,385.

Davis, John A., Jr., and W. J. Kunzman, to Marathon Oil Company. Increasing the thermostability of micellar dispersions. Re. 27,387, 6–13–72, Cl. 166—252.

Geigy, J. R., A.G.: *See*—
Soiron, Karl, Rafael, and Stockar. Re. 27,386.

General Tire & Rubber Company, The: *See*—
Uelzmann, Heinz. Re. 27,388.

Hirata, Tadashi: *See*—
Matsui, Masanao, Yamada, Uzu, Hirata, and Wakaki. Re. 27,384.

International Standard Electric Corporation: *See*—
Sandbank, Carl P., and Butler. Re. 27,385.

Kunzman, William J.: *See*—
Davis, John A., Jr., and Kunzman. Re. 27,387.

Kyowa Hakko Kogyo Co., Ltd.: *See*—
Matsui, Masanao, Yamada, Uzu, Hirata, and Wakaki. Re. 27,384.

Marathon Oil Company: *See*—
Davis, John A., Jr., and Kunzman. Re. 27,387.

Matsui, Masanao, Y. Yamada, K. Uzu, T. Hirata, and S. Wakaki, to Kyowa Hakko Kogyo Co., Ltd. Acylated mitosenes. Re. 27,384, 6–13–72, Cl. 260—326.3.

Rafael, Hans: *See*—
Soiron, Karl, Rafael, and Stockar. Re. 27,386.

Sandbank, Carl P., and M. B. N. Butler, to International Standard Electric Corporation. Scanned line radiation source using a reverse biased P-N junction adjacent a gunn diode. Re. 27,385, 6–13–72, Cl. 317—235.

Soiron, Karl, H. Rafael, and W. Stockar, to J. R. Geigy, A.G. Process for aftertreatment of colored polyamide fibers. Re. 27,386, 6–13–72, Cl. 8—165.

Stockar, Walter: *See*—
Soiron, Karl, Rafael, and Stockar. Re. 27,386.

Tillman, Cassius L., III. Pipe joint. Re. 27,389, 6–13–72, Cl. 277—171.000.

Uelzmann, Heinz, to The General Tire & Rubber Company. Accelerated epoxy-amine resinous compositions catalyzed with SH yielding material. Re. 27,388, 6–13–72, Cl. 260—047.0.

Uzu, Keizo: *See*—
Matsui, Masanao, Yamada, Uzu, Hirata, and Wakaki. Re. 27,384.

Wakaki, Shigetoshi: *See*—
Matsui, Masanao, Yamada, Uzu, Hirata, and Wakaki. Re. 27,384.

Yamada, Yasuhiro: *See*—
Matsui, Masanao, Yamada, Uzu, Hirata, and Wakaki. Re. 27,384.

LIST OF PLANT PATENTEES

Holtkamp, Hermann. African violet. 3,205, 6–13–72, Cl. 69.

Holtkamp, Hermann. African violet. 3,206, 6–13–72, Cl. 69.

Holtkamp, Hermann. African violet. 3,207, 6–13–72, Cl. 69.

Holtkamp, Hermann. African violet. 3,208, 6–13–72, Cl. 69.

Holtkamp, Hermann. African violet. 3,209, 6–13–72, Cl. 69.

Holtkamp, Hermann. African violet. 3,210, 6–13–72, Cl. 69.

LIST OF DESIGN PATENTEES

American Playground Device Co.: *See*—
Henning, Steven A, and Miller. 223,848.

Anchor Hocking Corp.: *See*—
Oglesbee, Richard K. 223,809.

Anzai, Shiro, M. Murata, T. Nishikawa, and T. Hanakata, to Canon Kabushiki Kaisha. Calculator. 223,865, 6–13–72, Cl. D64—11.

Arnone, Michael P.: *See*—
Enseki, Richard K., and Arnone. 223,870.

Arvin Industries, Inc.: *See*—
Bransky, Jeffrey D. 223,885.

Associated Mills, Inc.: *See*—
Grube, Clifford E. 223,856.
Hilger, Ronald O. 223,876.

Baltimore Brushes, Inc.: *See*—
Vines, Ellsworth. 223,864.

Barrault, Jean-Louis, to Le Trappeur Sillans. Ski-shoe. 223,791, 6–13–72, Cl. D2—276.

Bartlett, Eric C., to Dunlop Holdings Ltd. Tire. 223,888, 6–13–72, Cl. D90—20.

Beaver, Ted L., to Continental Can Co., Inc. Jug or similar article. 223,806, 6–13–72 Cl. D9—40.

Beaver, Ted L., to Continental Can Co., Inc. Jar or similar article. 223,808, 6–13–72, Cl. D9—44.

Belbow, David. Combination shoe brush, polisher and dauber. 223,881, 6–13–72, Cl. D86—11.

Ericsson, James W., and Genaro. 223,815

Bell Telephone Laboratories, Inc.: *See*—
Dreyfuss, Henry, and Stokes. 223,833.

Bell Telephone Laboratories, Inc.: *See*—
Belland, James A., E. Brown, and D. De Wuske. Carrier handle for garment hangers. 223,802, 6–13–72, Cl. D8—154.

Blumcraft of Pittsburgh: *See*—
Horgan, William J., Jr. 223,796.

Boehm, Kurt B., to Textron Inc. Snowmobile hood. 223,820, 6–13–72, Cl. D14—24.

Boehm, Kurt B., to Textron Inc. Snowmobile hood. 223,821, 6–13–72, Cl. D14—24.

Bohan, Richard. Combined soap tray and toy receptacle. 223,841. 6–13–72, Cl. D33—24.

Borden, Inc.: *See*—
Kusek, Edwin F. 223,804.
McIlvain, Howard H. 223,810.

Bowen, Thomas E., to Division of U.S. Industries, Inc., Southeastern Metals. Combined caster chair and tray for invalid. 223,823, 6–13–72, Cl. D15—1.

Bransky, Jeffery D., to Arvin Industries, Inc. Illuminable make-up mirror. 223,885, 6–13–72, Cl. D86—10.

Brown, Eugene: *See*—
Belland, James A., Brown, and De Wuske. 223,802.

Burroughs Corp.: *See*—
Sucre, Jay, and Hoffman. 223,863.

Caldwell, John W. Chair. 223,824, 6–13–72, Cl. D15—1.

Canon Kabushiki Kaisha: *See*—
Anzai, Shiro, Murata, Nishikawa, and Hanakata. 223,865.

Carlisle, Clifton E., and M. A. Spalding. Floating home. 223,868. 6–13–72, Cl. D71—1.

Chernack, Milton P., to Delcron Products, Inc. Smoking device filter cartridge. 223,879. 6–13–72, Cl. D85—6.

Christensin, Justin D. Coin tray. 223,882, 6–13–72, Cl. D87—1.

Citation Manufacturing Co., Inc.: *See*—
Hinkle, Richard A. 223,816.

Clarkson, Anthony T. Copy camera support stand. 223,862, 6–13–72, Cl. D61—1.

Continental Can Co., Inc.: *See*—
Beaver, Ted L. 223,806.
Beaver, Ted L. 223,808.

Cornelius Co., The: *See*—
Hartley, Robert B. 223,890.

Covey, Laird F., to The Stanley Works. Blade holder. 223,795, 6–13–72, Cl. D8—107.

Crook, Frank M. Eaves trough shield. 223,829, 6–13–72, Cl. D23—42.

Croyle, Jack V.: *See*—
Swett, James B., and Croyle. 223,854.

Danfoss A/S: *See*—
Jensen, Jens E. G., and Graversen. 223,797.
Jensen, Jens E. G., and Graversen. 223,798.
Jensen, Jens E. G., and Graversen. 223,799.
Jensen, Jens E. G., and Graversen. 223,800.
Jensen, Jens E. G., and Graversen. 223,801.

Dart Industries Inc.: *See*—
Swett, James B., and Croyle. 223,854.

Dean Jan, and M. Schwarz, to Revlon, Inc. Artificial eyelash. 223,884. 6–13–72 Cl. D86—10.

De Feo, Angelo, Jr. Combination hoe, cutter and edger for gardening. 223,793, 6–13–72, Cl. D8—11.

Delcron Products Inc.: *See*—
Chernack, Milton P. 223,879.

De Wuske, David: *See*—
Belland, James A., Brown, and De Wuske. 223,802.

Digital Technology Corp.: *See*—
Guidi, William R. 223,834.

Dreyfuss, Henry, and R. R. Stokes, to Bell Telephone Laboratories, Inc. Videotelephone transceiver control unit. 223,833, 6–13–72, Cl. D26—14.

Dunlop Holdings Ltd.: *See*—
Mills, Iain C. 223,887.
Bartlett, Eric C. 223,888.

EZ Painter Corp.: *See*—
Jarecki, James J. 223,872.
Jarecki, James J. 223,873.
Edwards, Harry, to Weathershields Ltd. Sealing strip for the sliding roof of a vehicle or similar article. 223,819, 6–13–72, Cl. D14—6.
Eguchi, Yoshiaki, to Janome Sewing Machine Co., Ltd. Sewing machine. 223,867, 6–13–72, Cl. D70—1.
Ellis, Charles M. Electric brush sterilizer. 223,874, 6–13–72, Cl. D83—1.
Emanuele, Roy L., to Institutional Maintenance Corp. Combination utility sink can washer sanitizer. 223,830, 6–13–72, Cl. D23—50.
Enseki, Richard K., and M. P. Arnone, to Kreisler Manufacturing Corp. Dual pen holder. 223,870, 6–13–72, Cl. D74—5.
Ericsson, James W., and D. M. Genaro, to Bell Telephone Laboratories, Inc. Pedestal mounted telephone station. 223,815, 6–13–72, Cl. D13—1.
FMC Corp.: *See*—
Halopoff, William E. 223,817.
Fedtro, Inc.: *See*—
Kahn, Robert D. 223,825.
Ferdinand, Irwin J., and I. R. Kulbersh, to The Hirsh Co. Storage box. 223,886, 6–13–72, Cl. D87—1.
Francken, Ruth. Chair. 223,813, 6–13–72, Cl. D15—1.
Fumey, Aime: *See*—
Lehmann, Andre, and Fumey. 223,857.
Fyfield, Rodney W.: *See*—
Penney, Richard H., and Fyfield. 223,832.
Genaro, Donald Michael: *See*—
Ericsson, James W., and Genaro. 223,815.
General Electric Co.: *See*—
Johnson, Carl N., and Stapleton. 223,851.
Johnson, Carl N. 223,852.
Johnson, Carl N. 223,853.
Shalvoy, John C. 223,883.
General Foods Corp.: *See*—
Laughlin, Clayton A. 223,847.
Gillette Co., The: *See*—
Nigro, Louis V. 223,811.
Tucker, James E. 223,880.
Glaser, Roger M. Radiotelemetry transmitter for monitoring heart rate. 223,877, 6–13–72, Cl. D83—1.
Graversen, Niels P. G.: *See*—
Jensen, Jens E. G., and Graversen. 223,797.
Jensen, Jens E. G., and Graversen. 223,798.
Jensen, Jens E. G., and Graversen. 223,799.
Jensen, Jens E. G., and Graversen. 223,800.
Jensen, Jens E. G., and Graversen. 223,801.
Grube, Clifford E., to Associated Mills, Inc. Portable hand steamer. 223,856, 6–13–72, Cl. D49—13.
Guidi, William R., to Digital Technology Corp. Digital tape recorder. 223,834, 6–13–72, Cl. D26—14.
Halloran, William X. Orthopedic drill guide target. 223,875, 6–13–72, Cl. D83—1.
Halopoff, William E., to FMC Corp. All terrain vehicle. 223,817, 6–13–72, Cl. D14—3.
Hanakata, Takamitsu: *See*—
Anzai, Shiro, Murata, Nishikawa, and Hanakata. 223,865
Harrell, Vaughn R. Fishing rod handle. 223,826, 6–13–72, Cl. D22—23.
Hart, Walter R., to The Union Fork and Hoe Co. Tool head for a lawn rake. 223,794, 6–13–72, Cl. D8—13.
Hartley, Robert B., to The Cornelius Co. Semifrozen juice dispenser or similar article. 223,890, 6–13–72, Cl. D94—3.
Henning, Steven A., and P. G. Miller, to American Playground Device Co. Animal figure seat for playground apparatus. 223,848, 6–13–72, Cl. D34—15.
Hilger, Ronald O., to Associated Mills Inc. Hand massager. 223,876, 6–13–72, Cl. D83—1.
Hinkle, Richard A., to Citation Mfg. Co., Inc. Golf bag cart. 223,816, 6–13–72, Cl. D14—3.
Hirsh Co., The: *See*—
Ferdinand, Irwin J., and Kulbersh. 223,886.
Hoffman William A.: *See*—
Snere Jay, and Hoffman. 223,863.
Horgan, William J., Jr., to Blumcraft of Pittsburgh. Combined door handle and lock housing set. 223,796, 6–13–72, Cl. D8—138.
Hurkamp, Charles H., to Lockheed Aircraft Corp. Airplane. 223,869, 6–13–72 Cl. D71—1.
Imai, Shogo, to Sharp Kabushiki Kaisha. Transistor radio. 223,860 6–13–72 Cl. D56—4.
Institutional Maintenance Corp.: *See*—
Emanuele, Roy L. 223,830.
JMR Enterprises, Inc.: *See*—
Perlman, Richard J. 223,831.
Janome Sewing Machine Co., Ltd.: *See*—
Yamamoto, Yasuaki 223,866.
Eguchi, Yoshiaki 223,867.
Jarecki, James J., to EZ Painter Corp. Display stand. 223,872, 6–13–72, Cl. D80—9.
Jarecki, James J., to EZ Painter Corp. Display stand. 223,873, 6–13–72 Cl. D80—9.
Jefferies, Jesse H. Circular slide rule. 223,859, 6–13–72, Cl. D52—6.
Jensen, Jens E. G., and N. P. G. Graversen, to Danfoss A/S. Control knob for a thermostatic valve or the like. 223,797, 6–13–72, Cl. D8—140.
Jensen, Jens E. G., and N. P. G. Graversen, to Danfoss A/S. Control knob for a thermostatic valve or the like. 223,798, 6–13–72, Cl. D8—140.
Jensen, Jens E. G., and N. P. G. Graversen, to Danfoss A/S. Control knob for a thermostatic valve or the like. 223,799, 6–13–72, Cl. D8—140.
Jensen, Jens E. G., and N. P. G. Graversen, to Danfoss A/S. Control knob for a thermostatic valve or the like. 223,800, 6–13–72, Cl. D8—142.
Jensen, Jens E. G., and N. P. G. Graversen, to Danfoss A/S. Control knob for a thermostatic valve or the like. 223,801, 6–13–72, Cl. D8—142.
Johnson, Carl N., deceased, by J. H. Johnson, executrix, and W. A. Stapleton, Sr., to General Electric Co. Clock or similar article. 223,851, 6–13–72, Cl. D42—7.
Johnson, Carl N., deceased, by J. H. Johnson, executrix of the estate of C. N. Johnson, to General Electric Co. Clock or similar article. 223,852, 6–13–72, Cl. D42—7.
Johnson, Carl N., deceased, by J. H. Johnson, executrix of the estate of C. N. Johnson, to General Electric Co. Clock or similar article. 223,853, 6–13–72, Cl. D42—7.
Johnson, Jean H.: *See*—
Johnson, Carl N., and Stapleton. 223,851.
Johnson, Carl N. 223,853.
Kabushiki Kaisha Tokyo Suehiro Sharyo Seisakusho: *See*—
Shimoji, Shusuke. 223,818.
Kahn, Robert D., to Fedtro, Inc. Insect electrocuting trap. 223,825, 6–13–72, Cl. D22—19.
Kawaguchi, Junichi: *See*—
Sakai, Jiro, Kawaguchi, and Noda. 223,871.
Koch, Samuel J. Combined cigarette lighter and ash tray. 223,878, 6–13–72, Cl. D85—2.
Kreisler Mfg. Corp.: *See*—
Euseki, Richard K., and Arnone. 223,870.
Kughta, Frank J. and R. L. May, to Mattel, Inc. Combined phonograph record and support for figure toy or the like. 223,842, 6–13–72, Cl. D34—4.
Kulbersh, Irwin R.: *See*—
Ferdinand, Irwin J., and Kulbersh. 223,886.
Kunkle, George E., Jr. Beverage smoother unit. 223,889, 6–13–72, Cl. D94—3.
Kusek, Edwin F., to Borden, Inc. Bottle or the like. 223,804, 6–13–72, Cl. D9—2.
Laughlin, Clayton A., to General Foods Corp. Activity toy. 223,847, 6–13–72, Cl. D34—15.
Lehmann, Andre, and A. Fumey, to PORTESCAP. Watch test stand. 223,857, 6–13–72, Cl. D52—1.
Le Trappeur Sillans: *See*—
Barrault, Jean-Louis. 223,791.
Lever Brothers Co.: *See*—
Thomson, Ernest F. 223,807.
Li, Tony. Exercising weight. 223,843, 6–13–72, Cl. D34—5.
Lichnecker, Harold A. Support for reinforcing rod. 233,803, 6–13–72, Cl. D8—228.
Lockheed Aircraft Corp.: *See*—
Hurkamp, Charles H. 223,869.
Loewy, Raymond. Kitchen cabinet. 223,840, 6–13–72, Cl. D32—19.
Long, Morris A., to Yorker Mfg. Inc. Closure for liquid containers. 223,812, 6–13–72, Cl. D9—287.
Lund, Allan W. Snow sled body. 223,822, 6–13–72, Cl. D14—24.
Martin, Roy C. Combined book support rack and planter. 223,837 6–13–72, Cl. D33—2.
Martuch, Leon L., to Scientific Anglers Inc. Fisherman's shoe. 223,792, 6–13–72, Cl. D2—310.
Mattel, Inc.: *See*—
Kughta, Frank J., and May. 223,842.
May, Richard L.: *See*—
Kughta, Frank J., and May. 223,842.
McIlheran, Louis C. Coin dispenser. 223,858, 6–13–72, Cl. D52—4.
McIlvain, Howard H., to Borden Inc. Milk case or similar article. 223,810, 6–13–72, Cl. D9—177.
Melton, Jerry T., to Televue, Inc. Protection viewer cabinet. 223,861, 6–13–72, Cl. D61—1.
Mikell, Leroy. Cocktail table. 223,839, 6–13–72, Cl. D33—14.
Miller, Philip G.: *See*—
Henning, Steven A., and Miller. 223,848.
Mills, Iain C., to Dunlop Holdings Ltd. Tire. 223,887, 6–13–72, Cl. D90—20.
Murata, Minoru: *See*—
Anzai, Shiro, Murata, Nishikawa, and Hanakata. 223,865.
Ney, David P. Building. 223,814, 6–13–72, Cl. D13—1.
Nigro, Louis V., to The Gillette Co. Fluid dispenser package. 223,811, 6–13–72, Cl. D9—219.
Nishikawa, Tatsuo: *See*—
Anzai, Shiro, Murata, Nishikawa, and Hanakata. 223,865.
Noda, Michihiro: *See*—
Sakai, Jiro, Kawaguchi, and Noda. 223,871.
Oglesbee, Richard K., to Anchor Hocking Corp. Carton for glasses. 223,809, 6–13–72, Cl. D9—176.
Penney, Richard H., and R. W. Fyfield, to Sperry Rand Corp. Electronic calculator. 223,832, 6–13–72, Cl. D26—5.
Perlman, Richard J., to JMR Enterprises, Inc. Sitz bath. 223,831, 6–13–72, Cl. D23—51.
Polenghi, Cianearle. Combined bottle, wrapping and product identification label. 223,805, 6–13–72, Cl. D9—10.
PORTESCAP: *See*—
Lehmann, Andre, and Fumey. 223,857.
Rath, Virgil K. Hoop rolling device. 223,844, 6–13–72, Cl. D34—5.
Revlon, Inc.: *See*—
Dean, Jan, and Schwarz. 223,884.
Roberson, Theodore L. Poker game board. 223,845, 6–13–72, Cl. D34—95.
Root, John J. Antenna. 223,836, 6–13–72, Cl. D26—14.
Sakai, Jiro, J. Kawaguchi, M. Noda. Carburetor. 223,871, 6–13–72, Cl. D77—1.
Schmidt, Arthur W., to Zenith Radio Corp. Paging receiver housing. 223,835, 6–13–72, Cl. D26—14.
Schwarz, Milton: *See*—
Dean, Jan, and Schwarz. 223,884.
Scientific Anglers Inc.: *See*—
Martuch, Leon L. 223,792.

Shalvoy, John C., to General Electric Co. Illuminable make-up mirror or similar article. 223,883, 6–13–72, Cl. 86—10.
Sharp Kabushiki Kaisha: *See*—
Imai, Shogo. 223,860.
Shaw, Frank D. Emergency lighting unit. 223,855, 6–13–72. Cl. D48—20.
Shimoji, Shusuke, to Kabushiki Kaisha Tokyo Suehiro Sharyo Seisakusho. Roller-bed trailer. 223,818, 6–13–72, Cl. D14—3.
Sicherman, Sondra J., to Startime Watch Co., Inc. Combined dial and hands for a watch or the like. 223,849, 6–13–72, Cl. D42—1.
Sicherman, Sondra J. Combined dial and hands for a watch or the like. 223,850, 6–13–72. Cl. D42—1.
Smith, Richard D. Gameboard. 223,846, 6–13–72, Cl. D34—5.
Smith, Russell G., to Xomox Corp. Duplex strainer unit. 223,828, 6–13–72, Cl. D23—4.
Southeastern Metals, Division of U.S. Industries, Inc.: *See*—
Bowen, Thomas E. 223,823.
Spalding, Martin A.: *See*—
Carlisle, Clifton E., and Spalding. 223,868.
Sperry Rand Corp.: *See*—
Penney, Richard H., and Fyfield. 223,832.
Stapleton, Walter A., Sr.: *See*—
Johnson, Carl N. 223,851.
Stanley Works, The: *See*—
Covey, Laird F. 223,795.
Startime Watch Co., Inc.: *See*—
Sicherman, Sondra J. 223,849.
Stokes, Rembert R.: *See*—
Dreyfuss, Henry, and Stokes. 223,833.
Sucre, Jay, and W. A. Hoffman, to Burroughs Corp. Microfilm viewer. 223,863, 6–13–72, Cl. D61—1.
Swett, James B., and J. V. Croyle, to Dart Industries, Inc. Container closure or the like. 223,854, 6–13–72, Cl. D44—1.
Televue, Inc.: *See*—
Melton, Jerry T. 223,861.
Textron Inc.: *See*—
Boehm, Kurt B. 223,820.
Boehm, Kurt B. 223,821.
Thomson, Ernest F., to Lever Brothers Co. Bottle or similar article. 223,807, 6–13–72, Cl. D9—42.
Tucker, James E., to The Gillette Co. Comb. 223,880, 6–13–72, Cl. D86—8.
Union Fork and Hoe Co., The: *See*—
Hart, Walter R. 223,794.
Valic, Anton J. Double desk. 223,838, 6–13–72, Cl. D33—7.
Vecchi, Carlo. In-line fuel filter. 223,827, 6–13–72, Cl. D23—4.
Vines, Ellsworth, to Baltimore Brushes, Inc. Paint tray. 223,864, 6–13–72, Cl. D64—18.
Weathershields Ltd.: *See*—
Edwards, Harry. 223,819.
Xomox Corp.: *See*—
Smith, Russell G. 223,828.
Yamamoto, Yasuaki, to Janome Sewing Machine Co., Ltd. Sewing machine. 223,866, 6–13–72, Cl. D70—1.
Yoker Mfg., Inc.: *See*—
Long, Morris A. 223,812.
Zenith Radio Corp.: *See*—
Schmidt, Arthur W. 223,835.

CLASSIFICATION OF PATENTS

ISSUED JUNE 13, 1972

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
3R 3,668,704
10 3,668,705
3,668,706
207 3,668,707

CLASS 3
1 3,668,708

CLASS 4
28 3,668,709
145 3,668,710
172 3,668,715
172.13 3,668,711
172.17 3,668,712
3,668,713
3,668,714
226 3,668,716
231 3,668,717
288 3,668,718

CLASS 5
17 3,668,719
91 3,668,720
109 3,668,721
327 3,668,722
3,668,723

CLASS 6
11 3,668,724

CLASS 8
14 3,669,611
54 3,669,608
116.3 3,669,609
128 3,669,610
165 Re.27,386

CLASS 9
8R 3,668,725

CLASS 10
129 3,668,726

CLASS 12
15 3,668,727
15.1 3,668,728

CLASS 13
9 3,670,089

CLASS 14
43 3,668,729

CLASS 15
83 3,668,730
146 3,668,731
159A 3,668,732
267 3,668,733
328 3,668,734
397 3,668,735
402 3,668,736

CLASS 16
55 3,668,737

CLASS 17
11 3,668,738
53 3,668,739

CLASS 21
2 3,669,614
2.5 3,669,612
2.7 3,669,613
3,669,615
3,669,616

CLASS 23
2S 3,669,617
51R 3,669,618
52 3,669,619
66 3,669,620
88 3,669,621
107 3,669,622
154 3,669,623
182R 3,669,624
186 3,669,625
230PC 3,669,627
230A 3,669,626
259 3,669,629
259.5 3,669,628
288F 3,669,630
342 3,669,631
345 3,669,632
357 3,669,633

CLASS 24
16PB 3,668,740
27 3,668,741
33C 3,668,742
68CT 3,668,743
73PB 3,668,744
205.1 3,668,745
230.5 3,668,746
241 3,668,747

CLASS 29
25.12 3,668,749
33M 3,668,750
76 3,668,751
121 3,668,753
124 3,668,752
157R 3,668,756
157 3,668,754
157.3R 3,668,757
182 3,669,635
182.1 3,669,634
199 3,668,755
3,668,758
200B 3,668,759
203DT 3,668,763
203B 3,668,760
3,668,762
203D 3,668,764
204D 3,668,761
219 3,668,765
237 3,668,766
283 3,668,767
401 3,668,768
419 3,668,748
421 3,668,769
423 3,668,770
429 3,668,773
431 3,668,771
563 3,668,772
578 3,668,774
603 3,668,775
604 3,668,776
628 3,668,777
629 3,668,779
630F 3,668,778

CLASS 30
178 3,668,780

CLASS 33
1 3,668,781
174R 3,668,782
179.5R 3,668,783

CLASS 34
10 3,668,784
14 3,668,785
43 3,668,786
111 3,668,787
156 3,668,788

CLASS 35
9E 3,668,789
12N 3,668,790

CLASS 36
50 3,668,791
59R 3,668,792
71 3,668,793

CLASS 37
8 3,668,794

CLASS 40
2.2 3,668,795
126A 3,668,796
130 3,668,797
152.1 3,668,798
3,668,799

CLASS 42
16 3,668,800

CLASS 43
17.1 3,668,801
57.5 3,668,802

CLASS 46
1R 3,668,803
17 3,668,804
151 3,668,805
201 3,668,806

CLASS 48
180P 3,669,636
195 3,669,637

CLASS 49
465 3,668,808
482 3,668,807

CLASS 51
128 3,668,813
135R 3,668,809
144 3,668,814
165.87 3,668,812

CLASS 52
6 3,668,810
28 3,668,826
36 3,668,827
92 3,668,828
94 3,668,811
169 3,668,829
400 3,668,830
484 3,668,831
591 3,668,832

CLASS 53
24 3,668,815
28 3,668,816
30 3,668,817
67 3,668,818
102 3,668,819
112R 3,668,820
123 3,668,821
250 3,668,823
330 3,668,824

CLASS 55
7 3,668,833
21 3,668,825
67 3,668,834
107 3,668,835
131 3,668,836
158 3,668,837
159 3,668,822
191 3,668,838
223 3,668,839
239 3,668,840
257 3,668,841
417 3,668,842
501 3,668,843

CLASS 56
7 3,668,844
11.6 3,668,845
205 3,668,846
252 3,668,847
334 3,668,848
400.04 3,668,850
400.17 3,668,849

CLASS 57
18 3,668,851
22 3,668,852
34HS 3,668,853
58.89 3,668,854
77.4 3,668,855
3,668,856
157TS 3,668,857

CLASS 58
2 3,668,858
23BA 3,668,860
23R 3,668,859
50R 3,668,861
58 3,668,862
3,668,863
3,668,864
127B 3,668,865
152R 3,668,866

CLASS 60
39.28 3,668,867
39.48 3,668,868
39.74R 3,668,869
54.5R 3,668,870
3,668,871
207 3,668,872
211 3,668,873

CLASS 61
41A 3,668,874
46 3,668,875
46.5 3,668,876
53 3,668,877
72.3 3,668,878
72.6 3,668,879

CLASS 62
45 3,668,880
55.5 3,668,881
77 3,668,882
158 3,668,883
228 3,668,884
235 3,668,885
262 3,668,887
346 3,668,886
373 3,668,888
476 3,668,889

CLASS 63
3 3,668,890

CLASS 64
12 3,668,891
14 3,668,892
21 3,668,893
30R 3,668,894

CLASS 65
3 3,669,638
4 3,669,639
182R 3,669,640

CLASS 66
1R 3,668,897
54 3,668,902
70 3,668,895
3,668,896
3,668,898
82 3,668,903
86A 3,668,904
140S 3,668,899
149S 3,668,900
176 3,668,901

CLASS 68
5D 3,668,905

CLASS 70
90 3,668,906
153 3,668,907
240 3,668,908
411 3,668,909

CLASS 71
35 3,669,641
87 3,669,642

CLASS 72
24 3,668,910
43 3,668,911
53 3,668,912
3,668,913
57 3,668,914
76 3,668,915
274 3,668,916
342 3,668,917
364 3,668,918
453 3,668,919
455 3,668,920
3,668,921

CLASS 73
1 3,668,922
3 3,668,923
61R 3,668,925
78 3,668,928
136R 3,668,926
154 3,668,927
181 3,668,931
281 3,668,929
382 3,668,932
386 3,668,930
3,668,933
421R 3,668,934
422GE 3,668,935
423A 3,668,936

CLASS 74
10.33 3,668,937
10.7 3,668,924
18.1 3,668,938
61 3,668,939
89.15 3,668,940
89.17 3,668,941
125 3,668,942
471R 3,668,943
505 3,668,944
569 3,668,945
640 3,668,946
804 3,668,947

CLASS 75
.5AA 3,669,643
.5B 3,669,644
20F 3,669,654
60 3,669,645
74 3,669,646
76 3,669,647
84.5 3,669,648
101 3,669,649
3,669,650
104 3,669,651
126C 3,669,652
128D 3,669,653
173R 3,669,655
176 3,669,656

CLASS 76
107S 3,668,948

CLASS 80
160 3,669,515

CLASS 81
57.13 3,668,949
98 3,668,950
121R 3,668,951
125 3,668,952

CLASS 82
22 3,668,953
36 3,668,954

CLASS 83
6 3,668,955
8 3,668,956
37 3,668,957
48 3,668,959
88 3,668,958
169 3,668,960
201.04 3,668,961
323 3,668,962
346 3,668,963
347 3,668,964
476 3,668,965

CLASS 84
471 3,668,967

CLASS 85
67 3,668,966
83 3,668,968

CLASS 89
1.819 3,668,970
43R 3,668,969

CLASS 90
11C 3,668,972
11R 3,668,971

CLASS 91
41 3,668,973
242 3,668,974
409 3,668,975
422 3,668,976

CLASS 92
17 3,668,977
98 3,668,978

CLASS 93
1R 3,668,979
3,668,980
36.5R 3,668,981
62 3,668,982

CLASS 94
50V 3,668,983

CLASS 95
4.5 3,668,984
10C 3,668,985
11R 3,668,987
3,668,988
3,668,989
11 3,668,986
12 3,668,990
39 3,668,991
3,668,992
42 3,668,993
64A 3,668,994
64R 3,668,995
89R 3,668,996
93 3,668,997

CLASS 96
1.8 3,669,657
33 3,669,658
3,669,659
3,669,660
3,669,664
36 3,669,665
36.2 3,669,661
38.3 3,669,673
41 3,669,666
68 3,669,667
75 3,669,662
86P 3,669,668
91N 3,669,669
94 3,669,663
95 3,669,670
100 3,669,671
126 3,669,672

CLASS 98
40DL 3,668,998
110 3,668,999

CLASS 99
1 3,669,674
3,669,675
7 3,669,676
17 3,669,677
28 3,669,678
48 3,669,000
70 3,669,679
77 3,669,680
78 3,669,001
86 3,669,681
90NF 3,669,682
91 3,669,683
100 3,669,684
103 3,669,685
3,669,686
138 3,669,030
139 3,669,687
3,669,688
140R 3,669,689
3,669,690
168 3,669,691
176 3,669,692
310 3,669,694
327 3,669,002
331 3,669,003
3,669,004
450.1 3,669,005
450.3 3,669,006
450.6 3,669,007

CLASS 100
35 3,669,008
52 3,669,009
3,669,010
118 3,669,011
121 3,669,012
211 3,669,013

CLASS 101
3R 3,669,014
76 3,669,015
93C 3,669,016
235 3,669,017
456 3,669,018
470 3,669,019

CLASS 102
6 3,669,020
22 3,669,021
28EB 3,669,022
42C 3,669,023
70.2R 3,669,024

CLASS 104
12 3,669,025
118 3,669,026
172BT 3,669,027

CLASS 105
157R 3,669,028
265 3,669,029

CLASS 106
43 3,669,695
47Q 3,669,696
53 3,669,697
54 3,669,698
74 3,669,699
98 3,669,700
120 3,669,701
287 3,669,702
288B 3,669,703

CLASS 108
50 3,669,031
97 3,669,032
111 3,669,033
152 3,669,034
3,669,035
153 3,669,036

CLASS 109
12 3,669,038
49 3,669,037

CLASS 110
7A 3,669,039
8A 3,669,040
18 3,669,041

184 3,669,042

CLASS 112

76 3,669,043
77 3,669,044
118 3,669,045
121.15 3,669,046
3,669,047
121.26 3,669,048
150 3,669,049
237 3,669,050

CLASS 113

54 3,669,051
119 3,669,054

CLASS 114

.5R 3,669,052
66.5H 3,669,053
229 3,669,055

CLASS 115

12R 3,669,056
18R 3,669,058
34R 3,669,057

CLASS 116

67R 3,669,059

CLASS 117

3.6 3,669,704
17 3,669,705
21 3,669,706
3,669,707
33 3,669,708
34 3,669,709
36.2 3,669,710
3,669,711
3,669,712
36.4 3,669,713
36.9 3,669,747
47A 3,669,714
53 3,669,715
62 3,669,716
72 3,669,717
3,669,718
93.1PF 3,669,719
93.31 3,669,720
95 3,669,721
100C 3,669,722
105.2 3,669,723
106R 3,669,724
136 3,669,725
138.8N 3,669,726
148 3,669,727
161UA 3,669,728
3,669,729
200 3,669,730
201 3,669,693
3,669,731
212 3,669,732
3,669,733
217 3,669,734
224 3,669,735
226 3,669,736
227 3,669,737
232 3,669,738

CLASS 118

7 3,669,060
3,669,061
9 3,669,062
13 3,669,063
39 3,669,064
48 3,669,065
50 3,669,067
50.1 3,669,066
64 3,669,068
102 3,669,069
3,669,070
264 3,669,071
637 3,669,072
3,669,073

CLASS 119

2 3,669,074
44 3,669,075
52B 3,669,076
72.5 3,669,077
157 3,669,078

CLASS 122

136R 3,669,079

CLASS 123

32EA 3,669,080
3,669,081
41.65 3,669,082
97B 3,669,083
139AW 3,669,084
140MC 3,669,085
148E 3,669,086

CLASS 124

11 3,669,087

CLASS 125

11R 3,669,089
11 3,669,088

CLASS 126

21A 3,669,090
165 3,669,092

CLASS 127

67 3,669,739

CLASS 128

1B 3,669,091
1.1 3,669,093
2M 3,669,099
2 3,669,094
2.05C 3,669,096
2.08 3,669,097
2.1E 3,669,110
2.1R 3,669,095
6 3,669,098
32 3,669,100
66 3,669,101
80C 3,669,105
84R 3,669,102
132D 3,669,106
134 3,669,107
145.8 3,669,108
147 3,669,109
156 3,669,103
217 3,669,104
218P 3,669,111
252 3,669,112
266 3,669,113
290 3,669,114
305 3,669,115
350R 3,669,116
360 3,669,117
361 3,669,118
410 3,669,119
419P 3,669,120

CLASS 130

27R 3,669,123
3,669,124
27T 3,669,121
3,669,122
3,669,125

CLASS 131

10.9 3,669,126
194 3,669,127
261B 3,669,128

CLASS 132

46R 3,669,129
138 3,669,130

CLASS 133

8A 3,669,131

CLASS 134

22R 3,669,741
22 3,669,740
23 3,669,742
58D 3,669,132

CLASS 135

45 3,669,133

CLASS 136

6 3,669,743
20 3,669,745
28 3,669,744
30 3,669,746
83T 3,669,748
86C 3,669,751
86R 3,669,749
86 3,669,750
3,669,752
114 3,669,753
126 3,669,754
170 3,669,755

CLASS 137

7 3,669,134
81.5 3,669,135
113 3,669,136
119 3,669,137
218 3,669,138
317 3,669,139
334 3,669,140
359 3,669,141
489 3,669,142
512.3 3,669,143
525 3,669,144
567 3,669,145
596.2 3,669,146
625.29 3,669,148
625.48 3,669,149
625.6 3,669,147

CLASS 138

26 3,669,150
31 3,669,151
46 3,669,152
89 3,669,153

CLASS 139

63 3,669,154
123 3,669,155
125 3,669,156
387 3,669,157
420R 3,669,158

CLASS 141

1 3,669,159
160 3,669,160

CLASS 143

32R 3,669,162
157A 3,669,163

CLASS 144

3D 3,669,161

CLASS 146

81 3,669,164
98 3,669,165
3,669,167
174 3,669,166

CLASS 148

1.5 3,669,760
1.6 3,669,757
6.14 3,669,758
6.15R 3,669,764
6.16 3,669,765
6.24 3,669,766
12.3 3,669,759
15 3,669,761
18 3,669,762
171 3,669,763
3,669,767
175 3,669,769
187 3,669,768

CLASS 150

.5 3,669,168
33 3,669,169

CLASS 151

41.75 3,669,170
44 3,669,171

CLASS 152

171 3,669,172
361 3,669,173
375 3,669,174

CLASS 156

3 3,669,770
8 3,669,771
15 3,669,772
17 3,669,773
3,669,774
3,669,775
18 3,669,776
54 3,669,777
62.2 3,669,778
72 3,669,779
73 3,669,780
84 3,669,781
3,669,782
90 3,669,783
109 3,669,785
148 3,669,784
162 3,669,790
163 3,669,786
167 3,669,788
182 3,669,789
238 3,669,793
244 3,669,791
3,669,794
249 3,669,792
265 3,669,795
272 3,669,796
316 3,669,797
334 3,669,798
359 3,669,799
383 3,669,800
3,669,801
387 3,669,802
477 3,669,803
544 3,669,804
567 3,669,805
580 3,669,806
581 3,669,807
582 3,669,808
3,669,809
583 3,669,810
3,669,811

CLASS 157

1.1 3,669,175

CLASS 161

37 3,669,813
3,669,814
3,669,815
38 3,669,816
44 3,669,817
63 3,669,818
66 3,669,819
68 3,669,820
127 3,669,821
130 3,669,822
141 3,669,823
166 3,669,824
167 3,669,787
188 3,669,825
196 3,669,826
227 3,669,827
252 3,669,828

CLASS 162

146 3,669,829
264 3,669,830
290 3,669,831

CLASS 164

4 3,669,176
26 3,669,177
50 3,669,178
66 3,669,179
83 3,669,182
122 3,669,180
281 3,669,181

CLASS 165

9 3,669,183
26 3,669,812
50 3,669,184
158 3,669,185
166 3,669,186

CLASS 166

217 3,669,187
252 Re.27,387
270 3,669,188
279 3,669,189
315 3,669,190

CLASS 169

1A 3,669,191

CLASS 171

40 3,669,192

CLASS 172

280 3,669,194
311 3,669,195
570 3,669,193

CLASS 173

19 3,669,197
44 3,669,196
127 3,669,198

CLASS 174

15C 3,670,093
52PE 3,670,091
65R 3,670,094
90 3,670,090
152R 3,670,092

CLASS 175

106 3,669,199

CLASS 176

68 3,669,832
3,669,833
87 3,669,834

CLASS 177

136 3,669,756

CLASS 178

5.4R 3,670,095
6 3,670,096
3,670,098
3,670,099
6.5 3,670,097
7.1 3,670,100
7.2 3,670,101
7.8 3,670,102
19 3,670,103
22 3,670,104
69.5F 3,670,105

CLASS 179

1SA 3,670,107
1G 3,670,106
18AD 3,670,110
18ET 3,670,109
18J 3,670,108
90B 3,670,111
100.2B 3,670,113
100.2C 3,670,114
100.2P 3,670,112

CLASS 180

1AS 3,669,200
6R 3,669,201
50 3,669,202
54A 3,669,203
69.1 3,669,204
98 3,669,205
3,669,206
3,669,207
3,669,208
3,669,209
103 3,669,210
112 3,669,211
120 3,669,212

CLASS 181

.5NC 3,669,213
32R 3,669,214
3,669,215
40 3,669,216

CLASS 182

48 3,669,217
97 3,669,218

CLASS 184

7A 3,669,219
105C 3,669,220

CLASS 187

95 3,669,222

CLASS 188

79.5K 3,669,221
188 3,669,223
202 3,669,224
298 3,669,225
345 3,669,226

CLASS 190

11 3,669,227
41R 3,669,228

CLASS 191

45R 3,670,115

CLASS 192

.098 3,669,234
12C 3,669,229
48.8 3,669,230
53D 3,669,231
85A 3,669,232
87.11 3,669,233

CLASS 194

10 3,669,235

CLASS 195

28N 3,669,836
28R 3,669,835
29 3,669,837
3,669,838
36R 3,669,840
37 3,669,839
43 3,669,845
63 3,669,841
66A 3,669,842
66R 3,669,843
3,669,844
96 3,669,846

CLASS 197

49 3,669,237
98 3,669,236

CLASS 198

16 3,669,238
25 3,669,239
31AA 3,669,240
102 3,669,241
127R 3,669,242
3,669,243
137 3,669,244
155 3,669,245
179 3,669,246
189 3,669,247
221 3,669,248

CLASS 200

6BB 3,670,116
16C 3,670,117
47 3,670,118
52R 3,670,119
61.55 3,670,120
67G 3,670,121
82D 3,670,122
144B 3,670,123
148R 3,670,124
3,670,125
3,670,126
150B 3,670,127
153LB 3,670,128
166C 3,670,129
183 3,670,130

CLASS 203

14 3,669,265
94 3,669,848

CLASS 204

11 3,669,849
16 3,669,850
25 3,669,851
46 3,669,852
49 3,669,853
55R 3,669,854
58 3,669,855
3,669,856
143M 3,669,858
151 3,669,857
181 3,669,859
192 3,669,860
3,669,861
3,669,863
195M 3,669,862
195R 3,669,864
206 3,669,865
207 3,669,866
224 3,669,867
228 3,669,868
268 3,669,869
297 3,669,870
298 3,669,871
299 3,669,872

CLASS 206

3 3,669,249
38R 3,669,250
44R 3,669,251
45.14 3,669,253
46FN 3,669,252
57A 3,669,254
59F 3,669,255
63.2R 3,669,256
65C 3,669,258
65F 3,669,259
65 3,669,257

CLASS 208

59 3,669,873
65 3,669,875
79 3,669,874
87 3,669,876
164 3,669,877

CLASS 209

73 3,669,260
74 3,669,261
80.5 3,669,262
82 3,669,263
138 3,669,264
144 3,669,847
166 3,669,266

CLASS 210

22 3,669,878
3,669,880
23 3,669,879
31 3,669,881
33 3,669,882
44 3,669,883
75 3,669,267
90 3,669,268
122 3,669,269
123 3,669,270
128 3,669,271
152 3,669,272
169 3,669,297
222 3,669,274
225 3,669,273
242 3,669,275

CLASS 211

34 3,669,276
41 3,669,279
49D 3,669,277
184 3,669,278

CLASS 212

7 3,669,280
144 3,669,281

CLASS 214

6P 3,669,282
8.5C 3,669,283
10.5R 3,669,284
138C 3,669,285
138R 3,669,286
147G 3,669,287
152 3,669,288
353 3,669,289
392 3,669,290
519 3,669,291
620 3,669,292
767 3,669,293

CLASS 215

9 3,669,294
3,669,295
3,669,296

CLASS 219

7.5 3,670,131
10.55 3,670,132
3,670,133
3,670,134
69C 3,670,136
76 3,670,137
114 3,670,138
130 3,670,139
137 3,670,135
3,670,140
271 3,670,141
367 3,670,142
375 3,670,143

CLASS 220

4R 3,669,298
10 3,669,299
36 3,669,300
39R 3,669,301
44R 3,669,302
46MS 3,669,303
55K 3,669,304
60R 3,669,305
113 3,669,306

CLASS 221

63 3,669,307
119 3,669,308
225 3,669,309
279 3,669,310

CLASS 222

3 3,669,311
70 3,669,312
95 3,669,313
129 3,669,358
136 3,669,314
148 3,669,315
193 3,669,316
195 3,669,317
307 3,669,318
309 3,669,319
389 3,669,320
402.24 3,669,321
454 3,669,322
490 3,669,323

CLASS 223

32 3,669,324

CLASS 224

2C 3,669,325
42.21 3,669,326

CLASS 226

11 3,669,327
97 3,669,328
108 3,669,329
174 3,669,330
176 3,669,331

CLASS 227
80 3,669,332
CLASS 228
3 3,669,333
3,669,334
5 3,669,478
50 3,669,335
CLASS 229
14BA 3,669,337
14C 3,669,336
23BT 3,669,338
23A 3,669,339
31 3,669,340
33 3,669,341
40 3,669,342
42 3,669,343
44CB 3,669,344
51BP 3,669,346
51TS 3,669,345
58 3,669,347
CLASS 235
60R 3,669,348
61.11D 3,670,146
61.11E 3,670,145
61.9 3,670,144
92J 3,670,147
144HC 3,670,152
150.2 3,670,148
150.22 3,670,149
151.11 3,670,153
151.3 3,670,150
152 3,670,154
181 3,670,151
194 3,670,155
CLASS 236
13 3,669,349
49 3,669,350
CLASS 237
19 3,669,351
CLASS 239
70 3,669,352
126 3,669,354
177 3,669,353
3,669,355
230 3,669,356
310 3,669,357
491 3,669,359
533 3,669,360
544 3,669,419
585 3,669,361
587 3,669,362
CLASS 240
2 3,670,156
41.35 3,670,157
41.5 3,670,158
65 3,670,159
102A 3,670,160
CLASS 241
8 3,669,363
CLASS 242
1 3,669,364
4B 3,669,365
18EW 3,669,373
26.41 3,669,366
54A 3,669,368
55 3,669,372
55.19A 3,669,374
56.9 3,669,369
75.4 3,669,375
75.45 3,669,370
3,669,376
82 3,669,377
84.1A 3,669,378
131 3,669,379
158R 3,669,380
182 3,669,381
186 3,669,382
192 3,669,383
194 3,669,384
CLASS 244
7A 3,669,371
13 3,669,385
46 3,669,367
52 3,669,386
102SL 3,669,387
138R 3,669,388
CLASS 246
40 3,670,161
CLASS 248
22 3,669,389
42 3,669,390
54R 3,669,391
121 3,669,392
188.4 3,669,393
221 3,669,394
235 3,669,395
309 3,669,396
371 3,669,397
373 3,669,398
3,669,399
400 3,669,400
CLASS 249
27 3,669,401
150 3,669,402
CLASS 250
41.3 3,670,171
41.9ME 3,670,162
43.5R 3,670,172
50 3,670,163
83.3R 3,670,164
199 3,670,165
3,670,166
221 3,670,167
225 3,670,168
226 3,670,169
229 3,670,170
CLASS 251
30 3,669,403
172 3,669,404
279 3,669,405
315 3,669,406
334 3,669,407
359 3,669,408
CLASS 252
36 3,669,884
62.1 3,669,885
3,669,886
62.9 3,669,887
63.2 3,669,888
71 3,669,889
89 3,669,890
90 3,669,891
3,669,892
156 3,669,893
187 3,669,894
188 3,669,895
301.3W 3,669,896
301.4S 3,669,897
307 3,669,898
316 3,669,899
359C 3,669,900
387 3,669,901
391 3,669,902
435 3,669,909
455 3,669,903
465 3,669,904
3,669,906
512 3,669,905
518 3,669,907
522 3,669,908
CLASS 254
45 3,669,409
139.1 3,669,410
168 3,669,411
CLASS 256
10 3,669,413
CLASS 259
8 3,669,414
12 3,669,415
21 3,669,416
147 3,669,417
3,669,418
CLASS 260
2.5AH 3,669,913
2.5B 3,669,912
2.5N 3,669,910
3,669,911
17R 3,669,914
17.4GC 3,669,915
3,669,916
28.5AS 3,669,918
29.6AN 3,669,919
34.2 3,669,991
37N 3,669,920
40R 3,669,921
41C 3,669,923
41R 3,669,922
45.9R 3,669,924
45.95 3,669,925
3,669,926
47CP 3,669,928
47CZ 3,669,930
47EC Re.27,388
47C 3,669,927
47R 3,669,929
75NC 3,669,932
75R 3,669,931
77 3,669,933
3,669,935
77.5AQ 3,669,936
77.5SP 3,669,934
77.5R 3,669,937
78A 3,669,939
78R 3,669,917
3,669,938
78.3R 3,669,940
78.4N 3,669,941
78.5R 3,669,942
80.7 3,669,943
82.1 3,669,944
85.3R 3,669,945
87.5R 3,669,946
93.5S 3,669,947
93.7 3,669,948
146D 3,669,951
210AB 3,669,952
3,669,953
230R 3,669,954
233.3R 3,669,955
239BF 3,669,956
239.1 3,669,957
3,669,958
239.3B 3,669,959
240J 3,669,960
248NS 3,669,961
3,669,962
249.6 3,669,963
249.8 3,669,964
250A 3,669,965
250R 3,669,966
256.4F 3,669,969
256.4Q 3,669,967
256.5R 3,669,968
260 3,669,970
286R 3,669,971
293.73 3,669,972
3,669,973
293.79 3,669,974
294.8D 3,669,976
294.8K 3,669,975
295.5T 3,669,950
301 3,669,977
3,669,978
304 3,669,979
3,669,980
306 3,669,981
306.8D 3,669,982
307H 3,669,983
307R 3,669,984
310A 3,669,985
326.13A 3,669,987
326.3 Re.27,384
326.5D 3,669,986
327S 3,669,988
332.2R 3,669,989
340.6 3,669,990
345.1 3,669,992
348R 3,669,993
380 3,669,994
399 3,669,995
408 3,669,996
410.5 3,669,998
410.9R 3,669,997
439R 3,669,999
3,670,000
448A 3,670,001
453P 3,670,003
453R 3,670,002
454 3,670,004
465G 3,670,005
465.3 3,670,006
3,670,008
3,670,009
465.5 3,670,007
479C 3,670,010
483 3,670,011
486AC 3,670,012
488J 3,670,013
497A 3,670,014
502.4P 3,670,015
526N 3,670,016
530N 3,670,017
545P 3,670,018
561HL 3,670,019
561N 3,670,020
561R 3,670,021
564E 3,670,022
566A 3,670,023
570D 3,670,024
576 3,670,025
592 3,670,026
593R 3,670,027
593 3,670,028
612D 3,670,029
613D 3,670,030
3,670,031
614AA 3,670,032
621R 3,670,033
623H 3,670,034
635C 3,670,035
652.5R 3,670,036
656R 3,670,037
665R 3,670,038
674H 3,670,041
674N 3,670,039
3,670,040
680E 3,669,949
3,670,042
683D 3,670,043
683.3 3,670,044
830R 3,670,045
830S 3,670,046
837R 3,670,047
857G 3,670,048
859R 3,670,049
860 3,670,050
873 3,670,051
876R 3,670,052
878B 3,670,053
880B 3,670,054
889 3,670,055
897C 3,670,056
948 3,670,057
CLASS 261
23A 3,669,420
25 3,669,421
34 3,669,422
36A 3,669,423
44R 3,669,424
79A 3,669,425
CLASS 263
8R 3,669,426
19D 3,669,428
3,669,429
21A 3,669,430
28 3,669,431
32R 3,669,432
33R 3,669,433
40R 3,669,435
CLASS 264
22 3,670,058
48 3,670,059
77 3,670,060
82 3,670,061
97 3,670,062
115 3,670,063
130 3,670,064
131 3,670,065
148 3,670,066
154 3,670,067
182 3,670,068
187 3,670,069
244 3,670,070
273 3,670,071
CLASS 266
13 3,669,436
33S 3,669,434
34LM 3,669,437
CLASS 269
20 3,669,438
130 3,669,439
181 3,669,440
CLASS 270
53 3,669,441
58 3,669,442
69 3,669,443
CLASS 271
3 3,669,444
26 3,669,445
29 3,669,446
53 3,669,447
64 3,669,448
74 3,669,449
CLASS 273
1.5R 3,669,450
95R 3,669,451
101 3,669,452
141A 3,669,453
176F 3,669,454
CLASS 274
4C 3,669,456
4E 3,669,455
3,669,457
CLASS 277
24 3,669,460
38 3,669,458
171 Re.27,389
174 3,669,459
235R 3,669,461
CLASS 279
51 3,669,462
CLASS 280
47.34 3,669,464
47.37 3,669,463
87R 3,669,465
91 3,669,466
124 3,669,467
267 3,669,468
492 3,669,469
CLASS 285
45 3,669,470
49 3,669,471
87 3,669,472
197 3,669,473
336 3,669,474
348 3,669,475
CLASS 287
20.95 3,669,480
52.07 3,669,477
53R 3,669,476
189.36C 3,669,479
CLASS 290
38R 3,670,173
CLASS 292
49 3,669,481
80 3,669,482
264 3,669,483
CLASS 293
71R 3,669,484
CLASS 294
19 3,669,427
73 3,669,485
74 3,669,486
104 3,669,487
CLASS 296
66 3,669,488
CLASS 297
217 3,669,489
248 3,669,491
253 3,669,492
272 3,669,490
429 3,669,493
440 3,669,494
445 3,669,495
3,669,496
3,669,497
452 3,669,498
455 3,669,499
CLASS 301
5B 3,669,500
37R 3,669,501
311 3,670,184
CLASS 302
19 3,669,502
64 3,669,503
CLASS 303
6C 3,669,504
3,669,505
3,669,506
3,669,507
21F 3,669,509
21R 3,669,508
22R 3,669,510
50 3,669,513
CLASS 306
33 3,669,512
CLASS 307
10R 3,670,174
64 3,670,175
136 3,670,176
141.4 3,670,177
202 3,670,178
221 3,670,179
244 3,670,180
262 3,670,181
293 3,670,182
304 3,670,183
3,670,185
CLASS 308
9 3,669,514
16 3,669,515
36.1 3,669,516
122 3,669,517
156 3,669,518
236 3,669,519
CLASS 310
9.5 3,670,186
10 3,670,187
17 3,670,188
46 3,670,189
60 3,670,190
163 3,670,191
196 3,670,192
CLASS 312
351 3,669,520
CLASS 313
108R 3,670,193
109 3,670,194
217 3,670,195
CLASS 315
3.5 3,670,196
3,670,197
11 3,670,198
12 3,670,200
13R 3,670,199
169TV 3,670,201
297 3,670,202
CLASS 317
2R 3,670,203
18D 3,670,206
61.5 3,670,204
101CE 3,670,205
101CM 3,670,208
101DH 3,670,207
135R 3,670,209
230 3,670,210
3,670,211
3,670,212
234R 3,670,213
3,670,214
3,670,215
235R Re.27,385
3,670,217
3,670,218
3,670,219
237 3,670,220
238 3,670,216
3,670,221
261 3,670,222
CLASS 318
124 3,670,223
227 3,670,224
270 3,670,225
345 3,670,226
581 3,670,227
594 3,670,228
CLASS 320
59 3,670,229
CLASS 321
10 3,670,230
12 3,670,231
14 3,670,232
18 3,670,234
3,670,235
27R 3,670,236
47 3,670,237
55 3,670,238
CLASS 323
17 3,670,233
CLASS 324
37 3,670,239
52 3,670,240
57R 3,670,243
72 3,670,244
73R 3,670,245
79R 3,670,241
133 3,670,246
CLASS 325
28 3,670,247
55 3,670,242
141 3,670,248
329 3,669,511
370 3,670,275
CLASS 328
110 3,670,249
CLASS 329
104 3,670,250
109 3,670,251
112 3,670,252
CLASS 330
17 3,670,253
107 3,670,254
CLASS 331
25 3,670,255
94.5 3,670,256
3,670,257
3,670,258
3,670,259
3,670,260
3,670,261
3,670,262
3,670,263
113R 3,670,264
116M 3,670,265
CLASS 332
14 3,670,266
CLASS 333
1.1 3,670,267
11 3,670,268
18 3,670,269
30 3,670,270
3,670,271
CLASS 335
112 3,670,272
204 3,670,273
260 3,670,274
CLASS 336
92 3,670,276
192 3,670,277
213 3,670,278
217 3,670,279
CLASS 337
21 3,670,282
111 3,670,280
112 3,670,281
354 3,670,283
360 3,670,284
CLASS 338
175 3,670,285
180 3,670,286
CLASS 339
12R 3,670,287
74R 3,670,288
75MP 3,670,290
91R 3,670,289
92M 3,670,291
143R 3,670,292
177MP 3,670,293
195M 3,670,294
198H 3,670,296
198S 3,670,295
232 3,670,297
276T 3,670,298
CLASS 340
8R 3,670,299
40 3,670,302
52A 3,670,300
65 3,670,301
146.1C 3,670,303
146.1F 3,670,304
146.3P 3,670,305
172.5 3,670,306
3,670,307
3,670,308

	3,670,309
	3,670,310
	3,670,311
174RC	3,670,314
174SR	3,670,312
174TF	3,670,313
174.1C	3,670,315
	3,670,316
198	3,670,317
199	3,670,318
244C	3,670,319
279	3,670,320
324A	3,670,322
324R	3,670,323
347DA	3,670,326
347SY	3,670,324
347P	3,670,325
384	3,670,321
CLASS 343	
7.4	3,670,334
8	3,670,327
	3,670,328
9	3,670,329
11R	3,670,330
	3,670,331
16R	3,670,332
18E	3,670,333
100SA	3,670,335
106	3,670,336
108M	3,670,338
108	3,670,337
CLASS 350	
3.5	3,669,521
6	3,669,522
57	3,669,523
87	3,669,524
158	3,669,525
159	3,669,526
189	3,669,527
205	3,669,528
CLASS 351	
17	3,669,529
	3,669,530
CLASS 352	
31	3,669,531
78C	3,669,532
95	3,669,533
CLASS 353	
21	3,669,534
CLASS 355	
3	3,669,412
8	3,669,535
40	3,669,536
50	3,669,537
64	3,669,539
67	3,669,538
CLASS 356	
4	3,669,540
5	3,669,541
36	3,669,542
42	3,669,543
74	3,669,545
85	3,669,544
86	3,669,546
93	3,669,547
141	3,669,548
152	3,669,549
	3,669,550
197	3,669,551
199	3,669,552
202	3,669,553
244	3,669,554
CLASS 402	
8	3,669,555
CLASS 408	
10	3,669,556
16	3,669,557
43	3,669,558
CLASS 415	
10	3,669,559
41	3,669,560
90	3,669,561
159	3,669,562
211	3,669,563
CLASS 416	
121	3,669,564
134	3,669,566
185	3,669,565
CLASS 417	
48	3,669,567
203	3,669,568
222	3,669,569
	3,669,570
341	3,669,571
390	3,669,572
416	3,669,573
477	3,669,574
555	3,669,575
571	3,669,576
CLASS 418	
21	3,669,577
45	3,669,578
83	3,669,579
CLASS 424	
3	3,670,072
47	3,670,073
60	3,670,074
110	3,670,075
157	3,670,076
200	3,670,077
212	3,670,078
241	3,670,079
	3,670,080
244	3,670,081
250	3,670,082
256	3,670,083
268	3,670,084
270	3,670,085
	3,670,086
273	3,670,087
275	3,670,088
CLASS 425	
30	3,669,580
34	3,669,581
72	3,669,584
78	3,669,582
109	3,669,585
	3,669,586
112	3,669,587
113	3,669,588
116	3,669,589
119	3,669,590
131	3,669,591
155	3,669,592
186	3,669,593
	3,669,594
188	3,669,595
192	3,669,596
214	3,669,583
216	3,669,597
242	3,669,599
245	3,669,600
249	3,669,598
	3,669,601
317	3,669,602
326	3,669,603
379	3,669,604
398	3,669,605
	3,669,606
CLASS 431	
95	3,669,607

CLASSIFICATION OF DESIGNS

D 2—	276	223,791
	310	223,792
D 8—	11	223,793
	13	223,794
	107	223,795
	138	223,796
	140	223,797
		223,798
		223,799
	142	223,800
		223,801
	154	223,802
	228	223,803
D 9—	2	223,804
	10	223,805
	40	223,806
	42	223,807
	44	223,808
	176	223,809
	177	223,810
	219	223,811
	287	223,812
D13—	1	223,814
		223,815
D14—	3	223,816
		223,817
		223,818
	6	223,819
	24	223,820
		223,821
		223,822
D15—	1	223,813
		223,823
		223,824
D22—	19	223,825
	23	223,826
D23—	4	223,827
		223,828
	42	223,829
	50	223,830
	51	223,831
D26—	5	223,832
	14	223,833
		223,834
		223,835
		223,836
D30—	95	223,845
D33—	2	223,837
	7	223,838
	14	223,839
	19	223,840
	24	223,841
D34—	5	223,843
		223,844
		223,846
	15	223,842
		223,847
		223,848
D42—	1	223,849
		223,850
	7	223,851
		223,852
		223,853
D44—	1	223,854
D48—	20	223,855
D49—	13	223,856
D52—	1	223,857
	4	223,858
	6	223,859
D56—	4	223,860
D61—	1	223,861
		223,862
		223,863
D64—	11	223,865
	18	223,864
D70—	1	223,866
		223,867
D71—		223,868
		223,869
D74—	5	223,870
D77—	1	223,871
D80—	9	223,872
		223,873
D83—	1	223,874
		223,875
		223,876
		223,877
D85—	2	223,878
	6	223,879
D86—	8	223,880
	10	223,883
		223,884
		223,885
	11	223,881
D87—	1	223,882
		223,886
D90—	20	223,887
		223,888
D94—	3	223,889
		223,890

CLASSIFICATION OF PLANTS

P. —	69	3,205
P. —		3,206
P. —		3,207
P. —		3,208
P. —		3,209
P. —		3,210

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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18 : 223,814
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24 : 223,868
25 : 223,811
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